







# Rodime pulls off \$50m deal

by John Riley  
SCOTTISH company Rodime, the world's leading 3 1/2 in Winchester disc drive manufacturer, last week announced a \$50 million deal with US micro-maker TeleVideo.

The contract, to supply TeleVideo with its range of 3 1/2 in and 5 1/4 in hard disc drives, follows hard on the heels of a recent multi-million pound order for 3 1/2 in drives from another US micro manufacturer, Compaq.

Malcolm Dudson, Rodime director of marketing, says "Almost more significant than the size of the contract is that Rodime is supplying TeleVideo with a family of drives right across the spectrum." The contract covers Rodime's 42 Mbyte RO 208 5 1/4 in drives through to its 10 Mbyte RO 252 3 1/2 in drives.

Dudson confirms that production of drives for the US will be transferred to the company's new factory at Boca Raton, Florida, which is expected to come on-stream in the second quarter of this year.

# Hewlett-Packard opens French line

by Jack Gee  
HEWLETT-PACKARD will become France's leading microcomputer manufacturer this year, thanks to the opening of a production line for the HP150 model, according to Kleber Beauvillain, president of Hewlett-Packard France.

Deliveries from the company's factory at Grenoble, in the French Alps, will begin in February and the touch-screen units will be shipped to all parts of Europe.

"We are going to be France's top manufacturer of microcomputers and its biggest exporter," says Beauvillain. "The HP150 will make a major contribution to France's exports efforts. It will help improve the balance of payments problem in micro-electronics."

Hewlett-Packard's product range in France covers personal computers, networks and terminals. "We shall be selling more and more of our products, (except for the HP150), to the United States. The American market has a lot to offer the French micro-electronics industry," says Beauvillain.

For fiscal year 1983, ending October 31, Hewlett-Packard France exported 36% of its turnover (FFr 855 million out of a total of FFr 2395 million) while importing 44% of its turnover.

This year the French subsidiary's target is to raise its 50% of turnover. Beauvillain says a special effort is being made in the field of investment. FFr 100 million is earmarked for 1983, while FFr 166 million has been invested.

"This will include the purchase of a new factory site at L'Isle d'Abeau near Grenoble at the beginning of this year."

However, Beauvillain says that Hewlett-Packard's profits are low - only 2.7% of turnover compared with the corporation's average for its worldwide activities.

Beauvillain also complains of the difficulties encountered in venture agreements with French firms.

The company had to turn to an Italian firm, Telettra, to make an agreement on establishing a communications standards between Hewlett-Packard Systems and its partner's TLC-10 PARC changes.

Ironically, Telettra has since its TLC-10 licence from France's Jeumont-Schneider firm, it refused to do business with Hewlett-Packard.

# Makers are up in arms over cuts

by John Kavanagh  
THE government is cutting back on funding that helps UK computer manufacturers try out new systems on users - even though the industry says it is one of the most important support schemes.

Under the pre-production ordering scheme, the government pays the manufacturing costs on the first 10 or 20 units and places the products with suitable users.

The scheme is part of the government's support for innovation projects, which was granted an extra £40 million, to be added over three years, in last year's Budget.

The overall funding is not being cut; money is transferred from the pre-production ordering scheme to pre-research projects.

"The scheme is very widely used and very popular among manufacturers," said David Broad, chairman of the British Microcomputer Manufacturers Group.

"This will especially hit companies involved in developing new solutions to problems. It will be a big disappointment to many."



SINCLAIR... "Redressing the balance."

# Sinclair's fourth finds new fields

by Nuala Moran  
SIR Clive Sinclair launched his fourth computer last week, the Sinclair QL - which stands for quantum leap.

Billed as a professional computer, it has a Motorola 68000 chip, a 32-bit processor with an eight-hit data bus. It also has 128K RAM, two built-in 100K QL microdrives for mass storage, and a high resolution graphics in up to eight colours, full-size keyboard. It comes complete with four application programs at a cost of £399.

"The QL breaks into the technical, professional and senior students market for us," says Sinclair. "But it has wide applications for individual use."

Sinclair also has an eye on the BBC Model B micro market. Acorn's contract with the BBC comes up for renewal later this year (see page 6). "The BBC moves in its own way so we don't know what will happen. But we would like to find some way to redress the balance. At the moment, one company gets so much free publicity," says Sinclair.

A new operating system, QDOS, was designed for the machine. Its most significant feature is multi-tasking, with a full window capability so that up to 10 programs can be run on different parts of the screen simultaneously.

The QL also features SuperBasic. This is Sinclair's rewrite of Basic without the tears, in that it is procedure-structured, extendable and has an execution speed which is independent of program size. According to Sinclair: "It puts right all the things that are wrong with Basic. In fact, it's only called Basic out of all because that is what people know."

The applications software consists of four programs, QL Quill word processor, QL Abacus, a spreadsheet, QL Archive, a database and QL Easel, a graphics package.

Sinclair claims that comparison with any other machine is "almost meaningless". "We tried to resist drawing comparisons with other machines, but we did look at four popular machines and tried to estimate the cost of having a similar system on them."

He estimates that to get similar memory and mass storage on the BBC Model B would cost over £1,600 and for the Apple IIe, the ACT Apricot and the IBM-PC it would be over £2,000.

"There is a mass market for professional computers," says Sinclair. "But they cost at least £2,000."

At first, the QL will only be available by mail order, but Sinclair says that by the second half of the year it will be available in retail outlets and throughout the world.

The machine will have a \$499 price tag in the US and will be sold by Sinclair's own marketing operation, rather than through Times which sells the Spectrum.

Leader Comment - page 13

# Government gives lead

computer and terminal interfaces, PABX features and call logging information formats. Suggested future requirements include: local area networks (1985), videotex and telex (1986), file transfer and virtual terminal protocols (1987), digital access from PABXs to public networks (1985-1987) and digital access from workstations to PABXs (1988).

The CTA accepts the need for greater emphasis on user systems standards, despite the fact that it is already involved in the DUT's Focus committee which exists to promote the use of standards.

The strategy means that government departments will have a sophisticated information technology infrastructure to support increased productivity, Hayhoe says. It means a firm commitment to replace existing facilities with an integrated voice and data network, and endorsement of the CTA's role in policymaking and management, backed by substantial resources.

He says: "Ten years ago there were only about 250 major mainframe computer installations in central government and very few terminals. Now there are around 700 medium to large computer systems, 900 smaller ones, and no less than 10,000 data terminals."

"Moreover, the number of data terminals will rise very sharply."

# Eusidic urges more database openness

by Philip Hunter  
PRODUCERS of public databases are urged to make their information more freely available and to conform to normal pricing standards.

New guidelines agreed by 200 major European users and suppliers of data implore the database producers to make information readily available.

The European Association of Information Services (Eusidic) is to issue a series of recommendations to suppliers of publicly-available databases, with the aim of making the information more accessible, cheaper and more accurate.

Suppliers should be responsible themselves for the accuracy of the information they provide for databases, says Eusidic chairman Harry Collier.

Eusidic is a non-government organisation funded entirely from the annual subscriptions of £245 paid by each member.

Some of the members in the organisation include IBM France, Control Data, ICL, Shell and Unilever.

"The idea is not so much to standardise, but to agree what's there," says Collier.

"It is an attempt by major producers to agree on fair trading standards."

The group was established 12 years ago in an attempt to get database standards moving.

Now members meet privately every spring to discuss technical matters, with an open conference in the autumn.

The group is also involved with lobbying organisations such as the European Commission on an international basis.

Another of its activities is to alert members to developments in their own countries, such as the Data Protection Bill presently being debated in the UK.

"We are also interested in the data protection area, ensuring we know exactly what is being done," says Collier.

Eusidic would urge members to lobby their governments if legislation attempted to restrict access to data, Collier adds.

"The main barriers to data access are in the telecommunications area, via tariffs and restrictions," says Collier.

Eusidic is in the process of getting involved in development of telecommunications standards.



MOORE... "Business improved substantially in 1983."

# Record results prove semiconductor health

by Dave Madden  
TWO US semiconductor manufacturers have given further evidence that the world semiconductor industry is now well out of recession. Intel has reported 1983 profits more than trebled, and it passed the billion dollar turnover mark for the first time, while Advanced Micro Devices made record profits in its third quarter.

Intel's net profit for the year to December 31 was \$116 million - against \$30 million in 1982. Turnover increased from \$900 million to \$1.1 billion in the same period. In the fourth quarter profits were \$47 million compared with \$8 million for the final quarter of 1982.

Gordon Moore, chairman and chief executive officer, says "Our business improved during 1983. Advanced Micro Devices, a second source of Intel's micro family processors, reported profit up from \$6.6 million to \$20.2 million, on turnover ahead 70% to \$154.6 million in the quarter ended December 25, 1983.

# ICL profits look rosy

by Dave Madden  
IN an aggressive and optimistic speech at ICL's annual general meeting, chairman Sir Christopher Laidlaw said he expected further growth in profits this year - though they will be modest in comparison with the 92% increase in profits in 1983.

Laidlaw indicated that orders over the past three months will show a healthy improvement over the same period last year. But he warned that the benefits of this are unlikely to be translated into revenue until the second half of the 1984 financial year.

Laidlaw was able to point to ICL's collaboration with Mitel, with some satisfaction, rather than bawling to make excuses for the deal. ICL gained approval for Mitel's SX 2000 digital exchange, sold here as the DNX 2000, from British Telecom last December.

As far as its 2900 machines are concerned, Laidlaw said that ICL hoped to maintain demand for the product with new software systems - Quickbuild and Decision Support - and plug the gap to DML and Estril. Quickbuild is a series of software productivity and design tools for data processing personnel. The Decision Support software is designed to give user-data processing managers access to data.

Laidlaw said that he appreciated shareholders' disappointment with ICL's miserable share performance, down 40% until last year, for which the company is partly responsible by admitting that it will not produce the same profits growth this time. The market responded favourably to Laidlaw's statement - ICL shares rose 7p to 59p.

The company is still smarting from the adverse press comment after its 1983 results were released, which suggested that its recovery was under threat. It has launched an advertising campaign to try to repair the damage by explaining the progress it has made since 1980.

Sir Michael Edwards, who takes over from Laidlaw on April 2, said that he was "amused" by suggestions that his appointment would lead to policy clashes with managing director Robb Wilmut. He stressed that chairman and managing director have quite separate functions.

# IBM streamlines mainframes

by Keith Holder  
IBM is streamlining its System 36 and System 38 mainframes, with new models and price cuts. It hopes to rationalise these product lines in advance of additions to the ranges planned for later this year.

The internal capacity of the System 36 is doubled, while models 3, 5 and 7 of the System 38 are withdrawn. Five and seven MByte versions of the model 8 will also disappear.

The System 36 can now attach the IBM-PC and PCXT as a workstation.

Price/performance has been pepped up by price cuts of up to \$32,500 on some models, though not all are affected.

IBM commentator Mike Newman, of Interactive Database Systems, welcomed the announcement.

"They have provided users with a rational upgrade path, without having to swap around too many machines," he said.

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Five of ICL's nine adapted lorries that will travel 1,500 miles round Britain...

## ICL takes to the road

by John Riley  
ICL aims to attract 10,000 top decision makers to the five-month-long road show it launched last week.

The show, which will travel to eight locations around the country, is designed to illustrate how ICL's systems interlink in a working environment. The actual products take a back seat.

"This is not a product show," explained Tim Barnsley, the show's manager. "It is to give invited decision makers an overview glimpse of how our

systems interact. That is why the mainframes in the 'engine room' are out of sight."

According to Barnsley, the show involves 12 million worth of computers, 60 kilometres of cable, and "enough power to supply a village of 200 people".

The display is organised into booths, each of which represents a different activity of one hypothetical company. The aim is to show how changes in one department and their ripple effect on other departments can be interlinked using an ICL computer system.

"Our purpose is to explore some of the common problems found in most organisations and to show ways in which they may be solved by the effective use of information technology," said Alan Russell, director of ICL's UK division.

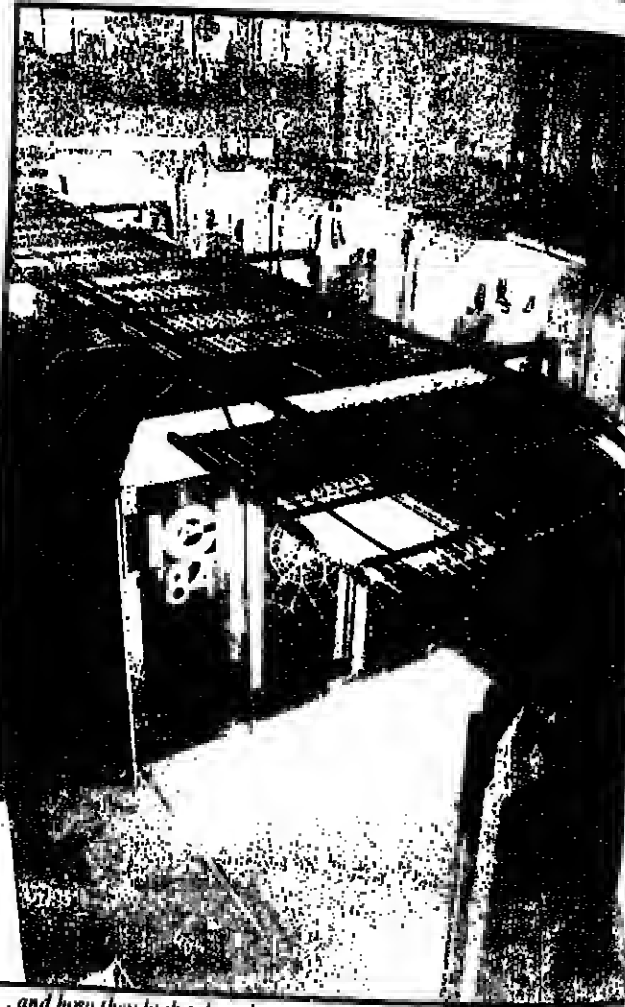
The hypothetical company has seven main departments - finance, sales and marketing, design and development, production, retail, and personnel - which are manned by 80 well-rehearsed ICL staff.

A wide range of equipment is used in each booth, linked to

either a 2966, ME29 Model 54 or System 25 Model 71 machine, and 34 ICL application packages are employed.

Marin Scott, ICL's product marketing manager for the UK, would not say how much the show is costing, but believes it will pay dividends: "You have to offset the cost against the expense of going out to, say, 1,500 top prospects," he said.

Venues for the show are London, Blackpool, Glenageary, Birmingham, Leeds, Newcastle upon Tyne, and Cheltenham.



...and how they look when they arrive at the show.

### SALES BRIEF

#### Five systems to aid kidney patients

WEST Midlands Regional Health Authority has ordered five computer systems from London-based Clinical Computing, and the first is now installed.

The systems are for use in accumulating and analysing data on kidney transplant patients.

#### Same again

CENTRAL Statistical Office has ordered two more 68000-based computers from Bleasdale Computer Systems to run Unix applications including multi-user word processing, spreadsheet analysis and relational database management. The office now has three Bleasdales, which can be hooked up to bigger Sperry computers via RS232 ports.

#### \$1m contract

DARKCREST has chosen Century Data Systems to supply 3in fixed and removable 80 Mbyte disc drives for its Thunderbolt II desktop 68000-based Unix system, in a \$1 million contract. The new micro offers up to four Mbytes main MOS memory, and prices start at about £10,000 for a complete system.

#### Pay package

RANK Hovis McDougall, the multinational food conglomerate, has picked an accounts payable package supplied by Management Science America for paying wheat suppliers. The package is to be installed on the group's IBM-compatible NAS mainframe running the MVS operating system, at the computing centre at Harlow, Essex.

#### Nixdorf repeat

NIXDORF has sold a second mainframe to CP Pharmaceuticals for order processing and management control. The new 8880 Model 55 will be linked to the existing 8870 Model 10 via dial lines and modems, and will run Nixdorf's Connet business software.

#### First UK dealer

UNISON Technology, the exclusive UK and Europe distributor for the Altus range of multi-user micros, which run the Pick operating system, has appointed its first UK dealer, Trippitt Associated Systems in a contract worth £250,000. The Altus micro was unveiled this week at the What Computer? show in Birmingham, and the intention is to appoint several dealers to attack vertical markets - shipping transport and freight forwarding in the case of Trippitt.

#### Police order

BURROUGHS will supply South Yorkshire Police with 10 386 series microcomputers for administration of two incident centres. The police used Burroughs' micros on the triple murder enquiry at Dore, Sheffield, with the help of BOS/Auto Index, a storage and retrieval package.

#### Zilog deal

ZILOG UK has swung a £1.3 million deal to supply Scandinavian software house Metric Group with Unix systems. The contract is for a minimum of 100 Zilog Series 8000 micros, which will go to various organisations throughout Scandinavia, including the Swedish defence department. Product support will come from Zilog's north European base in Malmoe, Sweden.

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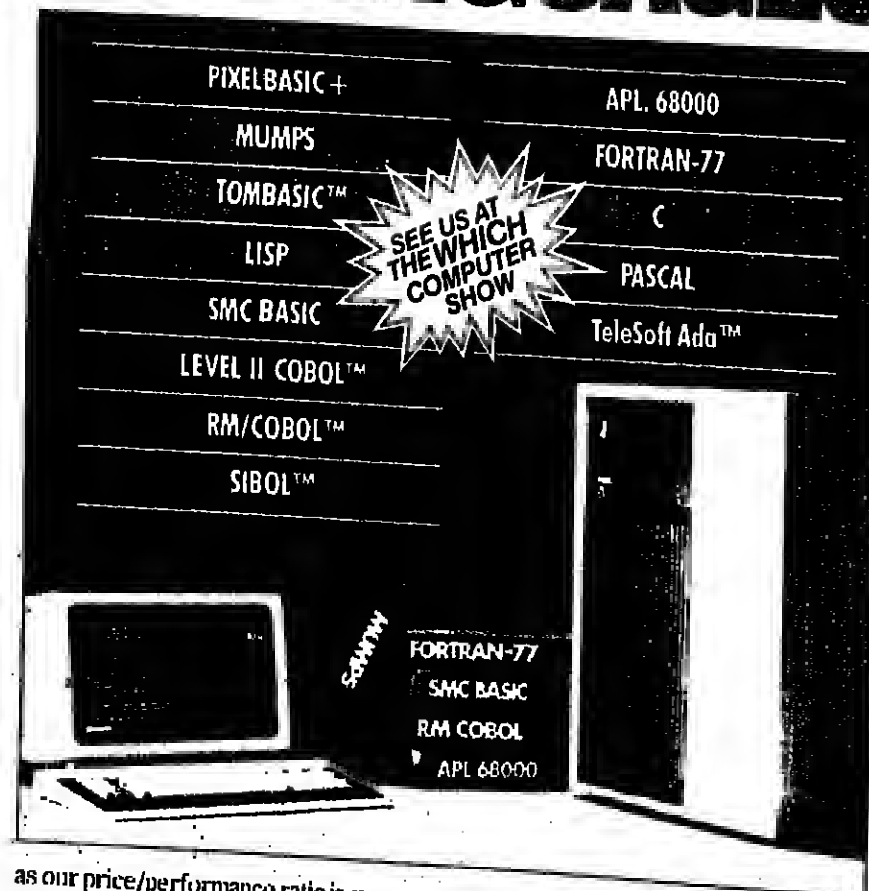
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## Logica expects to double production



BURDEN... Machine will be free of production problems.

## Optim extends range

by Philip Hunter  
Logica's VTS double production at its Swindon factory this year after a clutch of big orders for its VTS 2200 business system.

The company has supplied the French Ministry of Justice with 130 systems worth £1 million in the last six months, with more installations at French law courts expected this year.

Total sales of the VTS 2200 were about £10 million for the year ending June 1983, but production is now running at 160 a week. This year the product is expected to earn over £20 million.

ICL buys 120 of the 160 units produced each week as part of its OEM agreement with Logica, and sells essentially the same product as the DKS 80801. Some of the products are sold via ICL to British Telecom's Merlin office automation division, which resells them as the IIT Merlin 3300.

The VTS 2200 was originally developed in a joint agreement between Logica and Nexos, the now defunct government-owned office automation group.

Gesteuser had offered to buy Nexos, but lost interest when a reading of the small print of the contract involving the VTS2200 revealed that Logica would keep full manufacturing rights for the product.

ICL initially took marketing rights before signing the OEM deal with Logica.

The VTS 2200 is one of the few 16-bit word processors available.

will have the sole UK distribution rights. Mike Burden, Optim joint managing director, says that the deal has yielded a machine that will be free of production problems, since the Armstrong group, which turned over £100 million last year, has plenty of production capacity.

The machine runs the Unix and BOS operating systems, along with the high level languages Cobol, C, Fortran, Basic and Forth.

The Optim also runs the Unix office automation system.

## Report raps poor university set-ups

by John Riley  
BRITISH universities need 50,000 workstations worth up to £100 million over the next 10 years to supply industry with computer literate graduates, says a recent report.

The report, published by a working party set up by the Computer Board for Universities and Research Councils to investigate computer facilities for teaching in universities, hits out at poor university computing facilities, and says that at least one student in five should have a workstation by 1990.

"Existing facilities are inadequate, both in quality and quantity to produce graduates who will be able to play a leading role in the technological future of the UK," according to the Board.

Deficiencies in university equipment are listed: they include insufficient terminals and file store, poor response times, and the need to replace batch systems and inadequate graphics facilities. Another fault identified was poor cooperation between universities on software development.

The report recommends minimum requirements for a university workstation. The Computer Board, which funds university computing in the UK, has considerable influence over manufacturers, and has already insisted that minicomputers and mainframes used in universities should conform to its "coloured book" open system standards.

The university workstation should have the computing power of a Motorola 68000-based machine, at least 256 Kbytes store, at least a 512 Kbytes floppy

## BBC aims for wider literacy

by Donald Kennett  
THREE new add-ons for the BBC Micro are on their way this spring as the start of a massive expansion of the BBC computer literacy project. A new generation BBC Micro will follow, plus further telecourseware broadcasts, software on cassette and disc, books, radio and television programmes.

The add-ons are being developed by Acorn Computer, the maker of the current BBC Micro. They are: a £103 viewdata adapter due to go on sale at the end of March, a £195.50 6502-based second processor board that will allow some programs to run much faster, and a 280-based second processor board that will allow the machine to run CP/M software.

The second processor boards are due in April and May and the 280-based one is expected to cost between £300 and £400.

Aubrey Singer, managing director of BBC Television, said that the Corporation was talking to several manufacturers about the new machine and that a decision would be made in the next few months. Asked whether it had considered launching a less expensive machine, he said: "No, we haven't." The BBC Model B costs £399.

John Radcliffe, executive producer of BBC Continuing Education Television, said: "That need well served by machines already in the market. The value of our machine is in the education market, where the need for an expandable machine is borne out by our experience."

He went on: "A very large thrust of our publication activity is going to be in support of education, where first, not many publishers are making much money out of it, and secondly, there is shortage of good software."

"Telecourseware is a revolutionary and extraordinarily important development which is only just beginning. It has been running since September and over the next year you can expect big developments."

The bulk of the telecourseware sent out so far is transmitted continuously as part of the BBC's teletext service and a special teletext adapter is needed to get the programs into the micro.

But the BBC has experimented with sending data as an audio signal during an ordinary television or radio broadcast, usually late at night, and this is to become a regular feature of programmes in the future, starting with the Chip Shop programme on Radio 4.

## STC aims for Xtra boost

by Keith Holder  
THE microcomputer division of STC has challenged other manufacturers to submit their micros to an independent panel to discover which is the most IBM-compatible.

STC claims the Xtra, which it launched in the UK last week, is the most IBM-compatible machine on the market. The Xtra, which is manufactured by US multinational ITT and marketed by STC in the UK, is able to run MS-DOS and any IBM or third party software package, together with most peripherals, STC says.

To prove its point, STC has invited makers of other "IBM lookalike" machines to submit them for an independent compatibility test, with results to be published later this year.

The arrival of ITT's Xtra microcomputer does not mean the end of the road for the company's earlier 3030 system, according to Stuart Goldberg, marketing manager of STC business microcomputers, which markets both systems to the UK.

He admitted, however, that failure by ITT to deliver a promised 80286-based add-on board to convert the 3030 into a 16-bit IBM-PC compatible system made the product less attractive now that Xtra had been launched.

Xtra will be available in the UK in three months' time, and will run under the BOS operating system, used on the 3030, as an option.

Delays with the 80286 board were due to failure by Intel to supply the chip, said Goldberg.

Xtra, the first of a planned range, should not suffer similar troubles, said Goldberg, as it is entirely built by ITT in the US. Possible European manufacturing sites are also being looked at.

Although marketed by STC Business Microcomputers, a new division set up specially to cover all ITT's micro machines, most sales of Xtra are expected to come from a dealer network.

Goldberg said that dealers would be free to stock other companies' compatible software and peripherals.



GOLDBERG... Xtra does not mean end of road for earlier system.

## Thorn-EMI sets up Televideo arm

by Philip Hunter  
THORN-EMI has acted quickly to handle distribution of Televideo business computers, following its appointment last week as exclusive UK distributor for the Televideo machines. It has set up a new distribution company, Computeraid, headed by Pat Harvey, formerly North European marketing director at Televideo.

Meanwhile, the previous three Televideo dealers, Midlectron, Encotel and Colt Computers still hope to become Televideo OEMs and retain their dealers. But Midlectron would not comment on the outcome of a meeting with Televideo last week.

"Thorn-EMI wants us to become an OEM, but we're not sure that we will," said Midlectron operations manager Chris Blase.

Televideo vice-president for international sales Alan Pratt said that Thorn-EMI had been chosen to replace the three existing UK distributors because of the need to have a big name behind a renewed push in Europe.

"Thorn-EMI is better known than Televideo in the UK," he pointed out. "We also hope that it is only a temporary condition."

Pratt added that Televideo intended to phase out the previous three UK distributors as far as computers are concerned, but that they would be retained for distribution of terminals.

Televideo's market penetration in the UK has so far been disappointing. But according to BCU Computers, originally one of Midlectron's dealers for Televideo computers, this had not been the fault of distributors or dealers, but of Televideo itself for having out-of-date software. "The main problem is that the operating system is not up to date," said a spokesman.

But Televideo's TS 1605 micro will become available in the UK next month, offering IBM PC-DOS compatibility and applications software written by Thorn-EMI at around £2,600 for a complete system.

Televideo chairman Philip Hwang claimed that this new machine offered more IBM compatibility than the TS1603, which would run MSDOS but not PC-DOS programs.

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## MICRO NEWS



SHELTON... Designed and built the Sig/Net micro.

# Data Dynamics buys its way into micros

by John Riley  
SHELTON Instruments, the London-based microcomputer maker, has sold the manufacturing and marketing rights for its Sig/Net micro to Data Dynamics.

The deal frees Shelton Instruments to concentrate on innovation and takes Data Dynamics into microcomputers.

There is a link between the two companies. Data Dynamics is a subsidiary of Innotec, the investment company run by David Sainsbury, which also has a small stake in Shelton Instruments.

Shelton Instruments started as a

consulting engineering organisation run by managing director Chris Shelton, who designed and built the eight/16-bit Sig/Net multi-user micro. In two years, Shelton sold 2,000 units and finished the last fiscal year with a £2.5 million turnover.

The Sig/Net series has sold well in the business and educational markets, and its robust construction has been proved by continuous use over many months in dusty conditions on archaeological sites in Sri Lanka and the City of London.

Data Dynamics, which manufactures printers and distributes

ADDs' visual display units, was taken over by Innotec two years ago. Data Dynamics had been put into receivership after its chief accountant was jailed for 18 months for embezzling £39,500.

The company is now firmly back on the rails and in 1983 had a turnover of £3.5 million. "The acquisition of the Sig/Net rights will add £3.4 million to our turnover in the next 12 months," said Data Dynamics' marketing manager Richard Steggall.

"Shelton Instruments will retain its own identity," said Steggall, "and has reverted to its original

role of innovating, and dreaming up brilliant ideas, where its strengths lie. The company is now confined to developing Sig/Net units."

The deal will also boost Data Dynamics' export drive. It currently exports 35-40% of its products, according to Steggall, and could manufacture Sig/Net microcomputers in France through its sister company Parapheriques, also owned by Innotec.

Shelton Instruments has been actively selling to France, and was one of the seven UK exhibitors at France's largest computer exhibition, Sicob, in Paris last autumn.

## AT&T plant goes on

by Philip Hunter

AMERICAN Telephone & Telegraph will next month resume construction of a \$400 million high volume microelectronic component plant. Two years ago AT&T abandoned it because of a slump in the market for integrated circuits.

The 800,000 square-foot plant in Orlando, Florida, is now due to be finished early in 1985 and will then be producing 256K dynamic RAMs and other large scale integrated circuit devices.

In January 1981 work was begun on the plant by Western Electric, then a subsidiary of AT&T and now subsumed into the larger subsidiary AT&T Technologies as part of divestiture plans.

But work stopped on November 1981 with only the outer shell of the building complete, when demand for semiconductor products fell off. "We started up again because of the rather dramatic increase in the integrated circuits sector and surging demand for our products," said an AT&T spokesman.

AT&T has been marketing 256 DRAM chips made at its factory in

Pennsylvania for over a year, but spokesmen declined to say how many had been sold.

AT&T and other US firms making semiconductor products will have to step up production quickly to prevent the Japanese capturing the bulk of the mature market for 256K DRAMs, as they have already done for 64K RAMs.

Intel, for example, is still at the pre-production stage, and will probably start volume production of its CMOS version of the 64K RAM before introducing a 256K device.

Most 256K DRAMs are built in CMOS rather than NMOS systems, and several Japanese firms are starting volume production. Among the Japanese leaders are Fujitsu, the world's eighth largest chip maker, Hitachi and Mitsubishi.

Hitachi recently claimed that it was the first company to develop a 1Mbit RAM, and said that the design would be shown at the International Solid State Circuits conference in San Francisco next month. Samples are still some way off.

## Texas and Fujitsu team up

by Philip Hunter

SEMICONDUCTOR giants Texas Instruments (TI) and Fujitsu are teaming up on the production of gate arrays.

The alternate sourcing agreement will last for at least six years and covers Fujitsu's families of bipolar and CMOS gate arrays, with TI designing and producing compatible versions for worldwide marketing.

The two companies will also exchange software to make their computer-aided design tools compatible, offering their customers a common CAD interface for gate array design.

Fujitsu was beginning to have difficulties satisfying demand, according to product marketing engineer Steve Tomlinson.

"We were reaching the point where existing customers would stop using us because of that," he said.

Fujitsu has already sold gate arrays to many major OEMs, says

Tomlinson, but the deal with TI will give the company access to smaller buyers of semi-custom devices.

The deal could later be extended to cover other gate array devices, according to Milton Kuser, a TI product manager, who took part in negotiating the deal.

A gate array is a piece of silicon containing a large number of interconnected logic gates. The customer uses CAD techniques to connect up the logic gates according to his own particular requirements.

Following the agreement, the CAD tools of the two companies will be effectively interchangeable. This means that customers will be able to supply the same detailed design of logic, timings and test operations to either company.

Tohbi's link with LSI Logic is the only other example of a second sourcing deal for gate arrays between a Japanese and a US company.

## Graphics tablet beats mice

by Donald Kennet

READING-based Information Entry is ready to hit the big time with a new device that has been the undoing of others before it.

It has developed a graphics tablet that can be manufactured in large quantities at low cost, is simple, and robust enough for industrial environments, compact enough to be portable and versatile enough to be better than a mouse for screen control, according to a company spokesman.

It is now looking for OEM customers who will integrate the device into their workstations in

large numbers. In particular, it hopes to interest a large US company in marketing all its Multigraphics tablet products in the US and elsewhere overseas.

Sales director Phil Harris said: "We finished the development three months ago and now we are starting to ship."

The tablet is made using thick film technology, which makes it simple and moisture-proof. It has a resolution of 1,024 by 1,024 points in an A4-sized pad and it can accept coded overlays to give it a large variety of easily-set-up applications.

## SOFTWARE FILE

# Japan enlists Ada in world leadership bid

ADA will play an important part in the Japanese plan to beat the world in computers, a British conference on the language has been told.

Mike Rogers, of the Common Market's Esprit programme, said at the third Ada UK conference at York University that Japan was making significant use of Ada in its fifth generation effort as well as of the more-publicised Prolog.

Ada would be available before the revised version of Prolog, he said, and it was already claiming that the language gave a 27% improvement in programmer productivity.

Rogers painted a gloomy picture of the changing strength of information technology in Europe and Japan.

"There is no lack of innovation in Europe, but we are very slow to bring ideas to market," he said. Europe's trade balance in IT was deteriorating rapidly while Japan's was improving. In 1975 Europe had a \$1.7 billion lead, but by 1990 that would be turned into a \$10 billion lag, at a conservative estimate.

He complained of an imbalance between the EEC's large subsidies for agriculture and the tiny invest-

ment in research and development among its 20,000 IT companies.

In the era of transistors Japan had been five years behind; but now in the 64K RAM era it had moved ahead. The Japanese were getting their new products out in eight months. Europe took 15.

Among these new products was a major implementation of ADA by Japanese telecommunications giant NTT, which was also working on a version of Chill. But Japanese efforts had run into snags, he pointed out. He rejected the pessimistic conclusions of Ed Feigenbaum in a recent controversial book.

"He assumes they will meet all their objectives," said Rogers, "but they are only human. They'll meet some of those objectives, but not all."

Outlining the EEC's Ada schemes, he said they intended to launch the development of a full-scale Ada program support environment (APSE) and to back research into applications for manufacturing and telecommunications. They were looking into setting up a European validation service similar to that of the US Department of Defence.

John Barnes, of systems house SPL, one of the language's pioneers who chaired the conference, was hopeful that the British government's MCHAPSE initiative would go ahead on a limited scale. The £9 million plan was hit by a funding dispute in the autumn, leading to the withdrawal of one of its sponsors, British Telecom.

Barnes did not foresee any further work on the Chill element of the project but said they were in the process of re-establishing funding for various significant parts of it.

"Over the months to come a lot of important work will be sorted out again," he said. One of the problems had been that they were not sure of the detailed objectives that needed to be met.

But he admitted that the original timescale had envisaged the project reaching completion by 1987.

He said 1983 had been the year in which Ada started to take off. This was shown by the ANSI standardisation in February, followed by the DoD validation exercise. The community had been surprised when the Data General/Rolm compiler became the first to be validated as not many knew this work was going on. Soon after that

Western Digital's version had been validated.

It was apparent that commitment to Ada had grown with DoD backing. It had been a good year for compilers, if not for environments. The Telesoft, Data General and Intel compilers were being demonstrated at the conference, as well as York University's own.

He dismissed fears that the language would prove too complex. "We haven't found any training problems at all," he said.

Commander Trevor Syms spoke of a NATO software crisis which had been the focus of a meeting in Holland in December.

After listing the areas of weakness, he commented: "That doesn't leave an awful lot of space for success stories."

In November 1982 NATO had adopted Ada as its standard high-level language to be implemented by January 1985, "subject to satisfactory development in the marketplace".

He saw no way that NATO could impose a "chop" date after which all programs would use Ada. This meant some programs might have to use a mixture of languages and that Coral/Mascot would continue.



BARNES... "A lot of important work will be sorted out again".

## DEC User Society is shaken up

DEC User Society (DECUS) has had a shake-up. A new business group intended to be hardware-independent and aimed at DP managers holds its first meeting on February 2. The commercial user group, has been converted into an RSTS special interest group, to convene on February 21 and the former Vax talkshop is renamed the VHS special interest group.

## Training venture

ANEX Unix and artificial intelligence training venture has been set up by London software house Quantime, involving three ex-staff of the Spao recruitment group. The company, called The Instruction Set, has Peter Griffiths as managing director and Mike Banahan as technical director. Banahan serves on committees of the Unix European User Group and American National Standards Institute.

**Micro Focus buy**  
MICRO FOCUS, the UK Cobol specialist, has bought RDL, a subsidiary of Californian Unix developer Santa Cruz Operation. The deal involves Santa Cruz receiving Micro Focus shares and giving up its right to royalties on the C runtime system, which enables Micro Focus Cobol products to run in the Unix environment.

## First earnings

ABOUT 7,750 authors will receive their first earnings through the public lending right next month, calculated by a Logica program. Loans by 16 sample libraries in the first half of 1983 were recorded and processed on a Perkin-Elmer 3210 mini at Stockton-on-Tees.

## Package for GPs

US MINI-MAKER Digital Equipment has produced a software package for general practitioners, to run on its Professional 350 micro. Based on the Exeter Community Health Project, set up by the government in the early 1970s to examine the use of computers in patient care, it handles records, prescriptions and visiting schedules.

## Banking house fights for survival

A BIG US banking software house, fighting for survival, has had to default on a \$45 million credit agreement.

The company is Anacom of Indiana, whose Continuous Integrated System (CIS) development has fallen way behind schedule and plunged the once prosperous operation into debt.

In the year to last June it lost \$4 million on a turnover of \$172 million, and in the first quarter of the present tax year it lost \$12 million. At its zenith Anacom had some 2,700 staff worldwide.

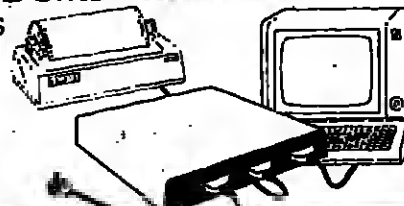
Delays in debugging the banking software have frightened off potential customers - the client list has been static at 16 for months - and allowed rival Hogan Systems of Texas to edge in with a simpler solution which is already available.

Software File is compiled by George Black

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CW 10/1



# More jobs flow to Scotland

IRVINE, the new town on the west coast of Scotland, is making a determined effort to get a slice of Scotland's growing high-technology industry.

SCI UK, a subsidiary of SCI Systems of Alabama, has announced that it intends to set up an assembly plant there.

The project is expected to create 250 new jobs in Irvine by April 1985, and a further 300 could follow within three years. Colin King, chairman and chief executive officer of the company, said that eventually the factory could take up to 2,000 people.

SCI Systems was founded in 1961 to supply military and aerospace electronics, and it is now making components for the computer industry. It is a quoted company in the US and in 1983 had pre-tax profits of \$11.1 million on turnover of \$182.5 million.

The company's initial investment in Irvine is worth about \$5 million, but this will rise to nearer

\$12 million.

King said the new operation would serve SCI's customers throughout Europe. SCI has received development grants and selective financial assistance from both the Scottish Office, through Locust in Scotland, and the Irvine Development Corporation.

Irvine represents a foot in the EEC's door, and King intends to offer assembly facilities to other US companies wanting to manufacture inside the Community. And this week Irvine Development Corporation announced the launch of another new company, Climax International, which will manufacture microcomputers in a 4,000 sq ft facility provided by the corporation. Peter Irvine, of the corporation, said that Climax should offer 50 jobs within two years.

Climax micros will run the Pick operating system, and its Irvine operation will include a research and development centre. Climax is

financed by both private and public investment, the details of which have not been revealed. Climax and SCI will be providing sorely needed work in Irvine where, despite the development corporation's efforts, unemployment is almost 25%.

Irvine is the youngest of the Scottish New Towns. It has special development status and can offer the maximum financial incentives - in the form of both grants and rent free accommodation - available to UK authorities. According to Peter Irvine, it is making every effort to attract new investment and high technology companies to an area already bounded by IBM in Greenock and DEC in Ayr.

The arrival of SCI and Climax give further evidence of the significance of the electronics sector to Scotland. The electronics industry is estimated to employ some 40,000 in 200 companies. About 40% are not Scottish.



JONES... Keeping a low profile and working a mouth's notice.

## BIT of a disaster floors Berisford

WHEN S&W Berisford, one of the world's leading commodity traders, formed Berisford Information Technology out of its internal data processing department, it thought it was on to a good thing. There were strong precedents: National Westminster Bank and Unilever had done much the same with Centreline and UCSL respectively.

But 18 months and an estimated £50 million later it has pulled the plug and, as reported briefly last week, BIT has ceased trading.

In an announcement of studied indifference, S&W Berisford revealed that after reviewing its progress, BIT had been withdrawn from external markets.

As one commentator had it: "The board of S&W Berisford takes no prisoners." But BIT will not disappear without comment. It employed 60 people, some 40 of whom look set to lose their jobs - though the company would neither confirm nor deny this. It was set up with considerable ambition, and became a significant ICL Trader's point dealer, selling largely DRS systems. It also handled ICL's HX20 portable.

BIT was managed by David Jones. As a consultant with Nolan and Norton he had been criticised for the possibility of co-ordinating its data processing and he ended up running the operation. Selling

systems to other companies was, afterthought.

As recently as last September Jones claimed that BIT was on target for £20 million turnover within five years, by which time internal group business would have fallen to less than 10%.

Jones is now keeping a low profile. He is understood to be winding down the external operations, discussing environmental customers, while working a month's notice.

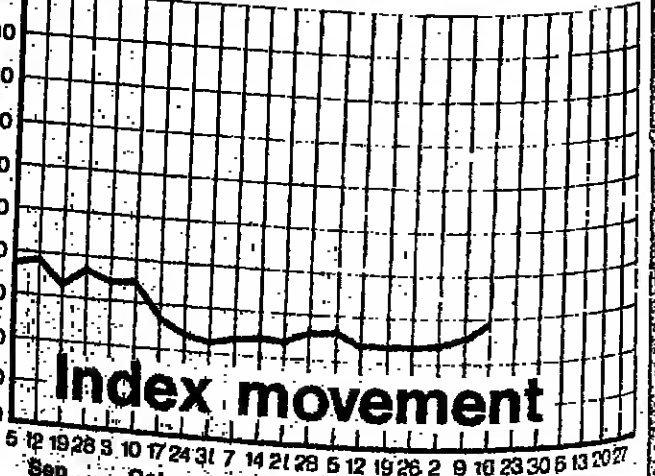
As far as ICL is concerned, it is not anxious to lose a Trader's point dealer. There is speculation that BIT staff may try to continue business, in which case ICL will be "quite prepared" to let the take part in Tradepoint.

## SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, reflects computer companies that reflect the state of the computer industry.

Price	London Stock Exchange	Price	Price	Price	Price
High	Low	High	Low	High	Low
314	308	100	98	100	98
308	302	98	96	98	96
302	296	96	94	96	94
296	290	94	92	94	92
290	284	92	90	92	90
284	278	90	88	90	88
278	272	88	86	88	86
272	266	86	84	86	84
266	260	84	82	84	82
260	254	82	80	82	80
254	248	80	78	80	78
248	242	78	76	78	76
242	236	76	74	76	74
236	230	74	72	74	72
230	224	72	70	72	70
224	218	70	68	70	68
218	212	68	66	68	66
212	206	66	64	66	64
206	200	64	62	64	62
200	194	62	60	62	60
194	188	60	58	60	58
188	182	58	56	58	56
182	176	56	54	56	54
176	170	54	52	54	52
170	164	52	50	52	50
164	158	50	48	50	48
158	152	48	46	48	46
152	146	46	44	46	44
146	140	44	42	44	42
140	134	42	40	42	40
134	128	40	38	40	38
128	122	38	36	38	36
122	116	36	34	36	34
116	110	34	32	34	32
110	104	32	30	32	30
104	98	30	28	30	28
98	92	28	26	28	26
92	86	26	24	26	24
86	80	24	22	24	22
80	74	22	20	22	20
74	68	20	18	20	18
68	62	18	16	18	16
62	56	16	14	16	14
56	50	14	12	14	12
50	44	12	10	12	10
44	38	10	8	10	8
38	32	8	6	8	6
32	26	6	4	6	4
26	20	4	2	4	2
20	14	2	0	2	0
14	8	0	0	0	0
8	2	0	0	0	0
2	0	0	0	0	0
0	0	0	0	0	0

The table shows the closing prices in London on Friday and in America on Wednesday and Thursday. Highs and Lows have been adjusted where necessary. The Star Index is based on a selected list of the UK companies.



## Murdoch snub

JAMES MORGAN, president of Atari, the video game and home computer subsidiary of Warner Communications, says the company will return a profit in 1984. But it is budgeting for a first half loss. Atari lost over \$500 million in the first nine months of the year, but while Morgan would not be drawn on the fourth quarter performance he estimated the year-end result would indicate that the company had turned a corner. And he denied speculation that Warner was ready to ditch Atari, and he said that the attentions of Rupert Murdoch were unwelcome.

# Sale surge revives mini giant

DATA GENERAL, which came back from the dead in 1983, continues to recover. It has reported a healthy increase in first quarter sales and profits.

In the 12 weeks to December 17 net profits increased almost threefold to \$9 million on sales up 20% at \$219.6 million.

Company president, Ed de Castro, said: "The improvement in orders and shipments is very encouraging." They represented an improvement in Data General's competitiveness, and a marginal recovery in worldwide capital spending.

The impetus for the increased sales is from the company's hardware division. About 35% of sales are outside the US.

De Castro said Data General had made a "very encouraging" start to its current quarter. He was optimistic about the company's prospects, but warned that sustaining growth would depend not only on customer orders, but on the availability of components, particularly semiconductors.

For the whole of fiscal 1983 Data General saw net profits fall 4% to \$23.1 million, on sales up to 3% at \$828.9 million.

The first quarter result represents earnings of 36 cents a share, against 14 cents in the corresponding period of 1983. Wall Street analysts are looking for between \$2 and \$2.50 per share in the year ending September 30, 1984.

George Black writes: Data General co-founder and vice-president Herb Richman, in London last week, had words of comfort for troubled rival mini-maker Digital Equipment.

He said he believed DEC was going through a bad patch such as Data General had experienced in 1981, but thought DEC would pull out of it before long.

"It will just take it a bit longer than it did for us, because a bigger company has greater inertia to overcome," he said. Some would say that any tears shed by Data General managers are a crocodile's, since business lost to DEC is likely to be their gain. Others might reply that Richman ought to know, as his firm has been through its own

financial slump and come out smiling.

The start of 1984 sees Data General about to launch its first big TV advertising campaign in this country, and switching its attention from office automation towards industrial sites.

Richman confirmed the findings of a recent International Data Corporation Computer Weekly survey that this year will see a boom in demand for computer equipment in the engineering sector.

This points to a prosperous period for both DEC and Data General, as engineering and research are traditionally committed to minis. Richman says factories are lagging a year or two behind offices.

But 1984 and 1985 will see them following the office trend with large capital expenditure programmes, he predicts.

He argues that Data General is well placed to take advantage of this expansion. It had patchy sales between 1980 and 1982 when operating income fell from \$106 million to \$35 million, as Data General restructured itself from serving OEMs to serving end users. It false-started into micros with the Enterprise, came in late to 32-bit superminis with the MV series, and re-entered the micro world only last summer.

The re-entry was well received by both technical and financial analysts, offering a choice of Data General proprietary and industry standard (MS-DOS) software.

DEC, meanwhile, is not yet out of the wood, according to some critics. Two legal disputes - one over a financial prediction by chairman Ken Olsen which US tipsters said was misleading, the other over alleged stock trading among managers - may have distracted it from its main business, and it has lost several bosses, including the UK manager Darryl Barbe.

In the autumn US market watebers were using phrases like "fumbling giant" and "out of touch" about DEC. But Richman's statement last week shows he is far from underestimating the strength of the mini market leader.



RICHMAN... "DEC will pull out of it before long."

# Robot researchers get £800,000 start

A BRITISH company has been formed with £800,000 venture capital backing to develop intelligent robot systems for industry.

Meta Machines is headed by Peter Davey, who currently leads the Science and Engineering Research Council's robotics programme, and Ed Hudson, previously manager of Unimation's European Systems Division.

Baronsmead Associates arranged the funding. Principal investors in the enterprise are Baronsmead itself, through the 1983/4 Baronsmead Expansion Scheme Fund, its own financial sponsor, Newmarket Venture Capital, and Oxford University.

Commenting on the investment, Davey said: "We started to look

seriously for backing last June, and at times it has seemed like hard graft. But we eventually had gone for the package which looked somewhat more favourable to the directors, and which had a long-term commitment to the company."

Davey and Hudson have a controlling interest in the company. Meta Machines will employ 15 people by the end of the year and anticipates 100 after five years.

The company will develop sensor-based robot systems - robots with integral guidance systems incorporating cameras to help control and plan their movements, rather than operating to a fixed set of instructions.

Company News is compiled by Dave Madden



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■ NEC Electronics (UK) has promoted two of its sales engineers and taken on a further three. At the Southern office at Reading, Alan Shaw has been promoted to consumer sales manager from senior sales engineer, and Dave Austin, previously a product sales engineer, is now a senior sales engineer. Dnn McKenney joins NEC from RCA Picture Tube Division as sales engineer responsible for consumer sales. The Lutworth office sees two new sales engineers: Steve Georgieff will be responsible for sales in the North Midlands Region and Kelvin Lecky for telecom sales. Bill Morton has been promoted to telecom sales manager from senior sales engineer. Two promotions at the company's head office are Terry Banks to distribution manager from senior sales engineer and Jim Lillie, a former product sales engineer, has become senior sales engineer.

■ Prime Computer (UK) Limited has appointed Peter Kite as marketing manager for manufacturing and CAD/CAM. He joined Prime as a member of Compaq where he had been employed for three and a half years, predominantly as a support manager for the plant design software, PDMS.

■ John Howe has been appointed divisional manager for Automated Controls and Systems (ACS), the newly-formed electronic product distribution subsidiary of Hy-Q Quartz Products. He was formerly marketing manager at Hy-Q.

■ Tech-Nel Data Products has appointed David Foley-Fisher (below) as UK sales manager, based at the company's head office at Banbury. Foley-Fisher joined Tech-Nel a year ago as a senior sales executive.

■ Harris Corporation announces the election of Jon E. Cornell to senior vice-president in charge of the company's semiconductor sector. He was formerly vice-president, group executive, of the semiconductor products group having joined Harris in 1968.

■ Fu Chee Cheng, a representative of Magnum Corporation, has joined the board of Plicom as an executive director.

Good news for roving reporters, international traders, travelling sales managers, and every company that seeks a versatile, portable printer for their computer! The Decwriter Correspondent (LA 12) is a desktop printer built to interface with most systems in the world. In fact with its acoustic coupler you can plug into most systems in any part of the world over the telephone lines. With 150 characters per second in draft mode and high resolution graphics capability the LA 12 has numerous applications. Digital

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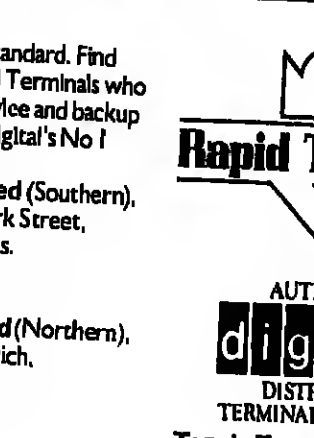
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**The Digital LA12.**



John Chatterton (above) has joined Harris Systems as general manager of its Digital Telephone Systems Division in Slough. He was formerly worldwide sales and marketing manager for ICL's Network Business Division, responsible for LAN and PABX sales.



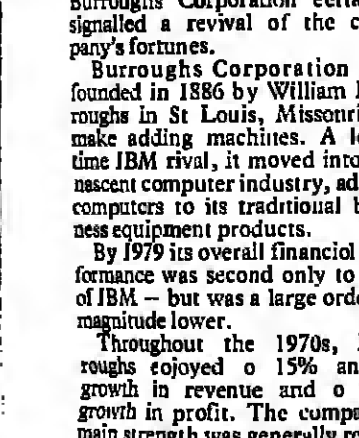
Paul Wyman has been promoted from personnel manager to group general manager, personnel and training for Datasolve, one of the companies in the Information Technology Division of Thorn-EMI. He is also appointed to the Datasolve operational management board. Wyman is chairman of Personnel Managers Common Interest Group, Computing Services Association. He joined Datasolve in 1979, and previously was with BOC.



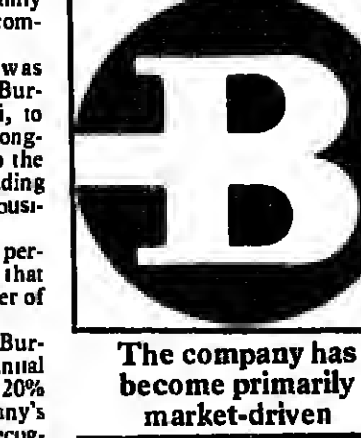
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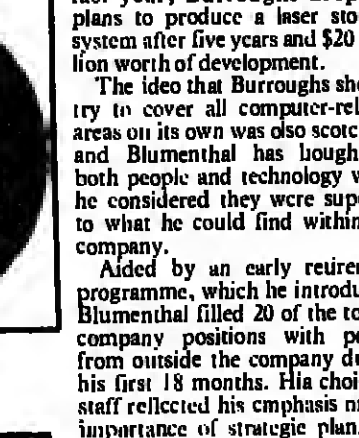
Dennis Moran has joined Rand Information Systems, the Kingston-upon-Thames based software house. He has been recruited from management consultancy in the City to head RISL's Financial Consultancy Unit, with responsibility for developing software products and services in insurance, electronic banking and office automation.



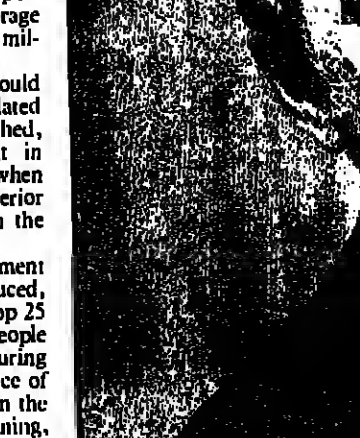
Nick Hollis (above) has been appointed managing director of Computer Peripherals (Systems), the exclusive UK distributor for the Telex Corporation's range of IBM 3270 compatible terminals. Eric Lipson, former managing director of CPS, becomes executive chairman for Computer Peripherals, the holding company for Computer Peripherals (Systems), European Marketing Consultants, and Tridemac, a rentals company. Hollis joins CPS after 18 years with BASF. He helped to form BASF's computer division in the UK in the late 1960s and held various management positions until being appointed divisional manager, which happened in 1979.



Charles Lamont has been appointed vice-president and general manager of Region 1 of the International Division of the computer systems operations of Sperry Corporation of New York. He was formerly director of customer and marketing support for the International Division, based at the company's UK headquarters in North London. In his new post he is responsible for all computer systems marketing and services in the Middle East, the Far East, Australia, South Africa and Latin America, operating out of Computer Systems' Worldwide headquarters at Blue Bell, near Philadelphia. A Scot, he joined Sperry in 1962.



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## Statistical machines pioneer dies

THE Bull Group has lamented with regret the death of Knut Andreas Knutsen, aged 95.

Knutsen, who took over the development and manufacture of the first statistical machine invented by his friend Fredrik Rosing Bull when Bull died in 1925, was born in Oslo. He started his career in Norway, then moved to Switzerland and later to France, where in 1931, he was appointed chief engineer in charge of research and production with Compagnie Bull.

In 1933, when, with the help of Knutsen, Compagnie Bull was granted the right to use F. R. Bull's patents, the company changed its name to Compagnie Des Machines Bull. Knutsen was then named director of patents and member of the board.

The death is also announced of Eric Wood, commercial director of Amstar (UK). He was 57.



## COMPANY PROFILE

Since 1980, when profits were slumping and the rate of revenue growth slipping, Burroughs Corporation has begun to live again.

The change has been so dramatic that employees speak of the

"new" and "old" Burroughs, almost as though they were separate companies.

This revitalisation has happened since the appointment of Michael Blumenthal as chairman. His policy has been to

prune away all of the company's weaker branches while nurturing the stronger, healthier arms.

He capitalised where the company was strong - in areas like CPU development and manufac-

ture - but wrote off \$125 million worth of obsolete products, and didn't hesitate to buy in better people and technology from outside the company when he thought it was necessary to do so.

John Riley examines the changes that Blumenthal has initiated, in service, support and in market direction, and then takes a detailed look at the company's future throughout the rest of the '80s

# Burroughs climbs out of the doldrums and breathes again

MICHAEL BLUMENTHAL, Secretary to the Treasury under the Carter administration, likes to joke that the recession in the US first began when he left the government.

Whatever the connection might have been, his appointment in September 1980 as chairman of Burroughs Corporation certainly signalled a revival of the company's fortunes.

Burroughs Corporation was founded in 1886 by William Burroughs in St. Louis, Missouri, to make adding machines. A long-time IBM rival, it moved into the nascent computer industry, adding computers to its traditional business equipment products.

By 1979 its overall financial performance was second only to that of IBM - but was a large order of magnitude lower.

Throughout the 1970s, Burroughs enjoyed a 15% annual growth in revenue and a 20% growth in profit. The company's main strength was generally recognised by customers and competitors alike as being in its technically advanced medium and large computers, and it had a significant user base, particularly in the financial community.

But during the second half of the 1970s the clouds started to gather and there were clear signs that the company was losing its direction. It was not responding effectively to the demands in the market place brought about by rapidly changing technology and the fast-expanding customer base.

The most persistent and potentially damaging criticism, which

gained strength from 1976 onwards, was the company's reputation for poor systems and engineering support.

There was also a wide range of other consistent criticisms, including an inward-looking management, inadequate testing of

where Burroughs was strong, particularly CPU development and manufacture, but vigorously pruned those in which it was weak. For example, by December 1980, he had written off \$125 million worth of obsolete products.

He has maintained that ability to cut his losses, as recently as April last year, Burroughs dropped plans to produce a laser storage system after five years and \$20 million worth of development.

The idea that Burroughs should try to cover all computer-related areas on its own was also scotched, and Blumenthal has bought in both people and technology when he considered they were superior to what he could find within the company.

Aided by an early retirement programme, which he introduced, Blumenthal filled 20 of the top 25 company positions with people from outside the company during his first 18 months. His choice of staff reflected his emphasis on the importance of strategic planning, quality control and systems and engineering support.

The "new" Burroughs (as it is referred to within the company) is acutely conscious of its poor reputation for support in the 1970s. "We shall set our goals to achieve total customer satisfaction, and to deliver error-free, competitive products on time, with service second to none," was Blumenthal's statement of quality policy.

That policy has crystallised into organisations aimed at breaking through potential bottlenecks in customer support, such as resource control centres and technical resource centres.

"Blumenthal has been a corporate tonic," says Iain Davidson, Burroughs' UK general manager of marketing, who remembers the "old" Burroughs with its "long line of home-grown and perhaps too in-converted corporate management".

Although Burroughs employees now contrast the "old" and "new" Burroughs, they are aware that many of the elements of the "new" were present in the "old". Blumenthal highlighted and developed them.

An example of this is that just before Blumenthal took up his position in 1980, Burroughs took over the software company Systems Development Corporation, which subsequently designed an electronic filing cabinet called Records Manager.

Blumenthal has followed up that approach of buying in technology where he has identified weaknesses in Burroughs' product line.

In December 1981 he took over an ailing Memorex to boost Burroughs' peripherals and disc drives capacity. Important fruits of that takeover were launched this time last year in the large capacity disc drives to go with the six mips B7900 top of range mainframe.

The reputation of Burroughs for having innovative processor designs was unfortunately coupled with our rather lack-lustre peripheral performance," Davidson reflected.

"Overnight, the synergy with Memorex gave us the volume production to survive in the '80s, with state-of-the-art peripheral products."

"We no longer try to do everything ourselves and we are prepared to make strategic acquisitions where they fit a long-term strategy," he added.

Blumenthal has also made deals with third party companies to take advantage of their technology. In October 1981, Burroughs signed an OEM deal with the Californian



The company has become primarily market-driven

products and pour peripheral performance.

The catalyst that joined the company into re-assessing its strategy - and appointing Blumenthal as chairman and chief executive in 1980 - was the slump in profits and in the rate of revenue growth.

In 1980, the revenue of \$2,902 million was only 2.5% up on the previous year, compared with the earlier 15% annual growth. At the same time, profits dropped from \$306 million in 1979 to \$82 million in 1980.

Blumenthal capitalised on areas



BLUMENTHAL... Has maintained his ability to cut his losses.

company, Convergent Technologies, and gained 85% of Convergent's output of 16-bit microcomputers - its B20 range - together with a seat on its board and manufacturing rights.

More recently, in August 1983, Burroughs announced a \$21 million deal with the Scottish-based banking and financial computer terminal manufacturer, Fortronic.

Line, which Burroughs claims reduces systems development time by 90%, was developed by two independent New Zealanders and Burroughs' New Zealand subsidiary started marketing it there in 1978.

In the early 1980s, there were signs that non-Antipodean Burroughs users were becoming impatient waiting for an applications generator from Burroughs. But during that time Line was being extensively evaluated so that since 1982 it has become a cornerstone in Burroughs' systems offerings.

Under the "new" Burroughs there have been moves to formalise procedures to make it easier for software houses to produce applications software. For example, in the UK in November 1982, Burroughs set up its Application Program Exchange (APEX) scheme whereby the company markets packages produced by third parties for agreed royalties.

There are currently about 30-40 software houses writing applications packages for Burroughs in the UK, in addition to its own

■ Continued on page 24

to develop a terminal for the financial market. Burroughs is to buy 15,000 terminals, worth £20 million, over three years and pay Fortronic £1 million development costs.

The "old" Burroughs had developed a strategy of selling to vertical markets, particularly in the finance sector, calling it "lines of business" strategy. Blumenthal extended that concept to cover all of Burroughs' activities, from marketing to product development. The company has become primarily a market-driven rather than a product-driven one.

The "lines of business" that are currently heavily targeted by Burroughs are the finance industries, the public sector and the manufac-

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Burroughs' 98-year history has ranged from winning the Queens Award to Industry in 1967 (above) to the profits slump of 1980.





## COMPANY PROFILE

Burroughs no longer promotes itself as a computer manufacturer shifting boxes of electronics but pushes the image of a gigantic systems house. And most of its systems and applications software is developed by big minicomputer and micro manufacturers.

It is also setting up computer business centres and selling machines through third parties in an effort to muscle in on markets dominated by big minicomputer and micro manufacturers.

John Kavanagh examines these trends and takes a detailed look at the third-party software packages

# How third parties fill software holes

IN 1982 Burroughs' US headquarters recruited a doctor into a top marketing job. Chairman Michael Blumenthal lists this as one of the significant events of the year in his last annual report, because it highlights Burroughs' move into selling packaged systems in specialist industries.

Movement towards sharply defined markets and selling through third parties are part of

what the company calls the new Burroughs. Blumenthal gave the company an urgently-needed shake-up when he arrived in 1981 but behind the scenes Jerry Jacobson, head of strategic planning, was looking outside the company for new ways of acquiring and selling products. As UK general marketing manager Iain Davidson puts it: "We no longer try to do everything ourselves."

Davidson says the UK subsidiary has adopted the new Burroughs philosophy more enthusiastically than any other. As far as selling its computers directly to users is concerned, it is concentrating on six markets, or lines of business: manufacturing, distribution and wholesale, finance and insurance, the construction industry, the legal profession and government and public services.

"There's not a single UK salesman without a line-of-business job title," says UK line-of-business marketing manager Tony Holden. "It's been a painful move: we've had to tell successful hardware salesmen to put aside what they know and extend their range and take on extra staff with no computing or sales experience. Now the focus is switching from dealing with the data processing manager, who is looking for a technical solution, to the financial director, the production manager and so on."

"Users are demanding user solutions. We need to understand the customer's business and advise on business solutions rather than computing solutions."

Existing staff have been retrained and specialists in the target markets have been taken on. A recent Burroughs job advertisement called for eight years' experience in distribution and added that computing and sales experience were not essential. "We're asking specialists to come and help us recognise opportunities," says Holden.

Burroughs points out that as hardware margins continue to be eroded, growth must come in

training its own staff and supporting users. With more complex products the software suppliers do the customer training. In all cases the user signs a sales contract with the software firm.

Holden insists there is no competition between Burroughs' products and third party suppliers. "We have opened up our plans to software houses, shown them where we have gaps and targets and then invited them to fill those gaps," he says.

As a result, over half Burroughs' packages come from Apex agreements. Companies taking part in the scheme include the production control (and ICL) specialist, Safe Computing. The company supplies its Microsafe package for the B20 microcomputer which Burroughs buys from Convergent Technologies.

Burroughs took on 25 firms in 1983 and expects to have 70 or 80 in the UK by the end of this year. It aims to do between 25% and 30% of its entire UK business through these firms in four years time.

To put that in perspective, ICL expects 15% of its business to come from third parties by 1985, while minicomputer giant Digital Equipment, which has always been in this market, gets 45% of its income in this way.

Meanwhile, Burroughs is setting up its own computer business centres. They, too, will cover microcomputer and minicomputer sales and support small users. Seven centres will be set up in the UK this year.

"In the 70s we had 40 UK branches, but such a big operation is no longer economic," said Graham Margetson, head of the business centres and the independent sales organisation (ISO) scheme.

Margetson is certain that Burroughs can avoid clashes between the third parties and its own sales people, a problem Digital Equipment struggled with during most of 1982 and 1983.

Half the ISOs are selling other companies' equipment as well as Burroughs', but Margetson says there are no clashes here, either the Burroughs products fit into gaps in their ranges.

The other half are already Burroughs software firms and these companies welcome the scheme. "Previously, we were mainly introduced to customers by Burroughs," says Alan Sparks, managing director of QRA Computer Group, one of the biggest Burroughs software houses. "This gives us independence. We can find our own business without having Burroughs tell us what we can and can't work on."

"We haven't always agreed on the best way of developing an account - and Burroughs was a senior partner. Now we can control that account and provide everything: equipment, software, training and so on."

In some cases, Burroughs takes full responsibility for the package,



"We have opened up our plans to software houses, shown them where we have gaps and targets and invited them to fill those gaps."

creatively from such services.

In the shorter term, Holden says the new systems approach has cut the cost of making each sale, because sales and development resources are concentrated on markets which the company knows give a good return, rather than scattered over all possible markets. For example Burroughs now puts little effort into the retail market, where it has no traditional strengths.

In 1982, Burroughs had only a handful of software packages for its target areas. But in the last year, the product range has filled out considerably and there are now packages for most of the markets available on most Burroughs processors.

Holden says the shortfall has been made up by internal use of the company's Line program generator, plus the introduction of the Apex (application program exchange) scheme. This involves Burroughs selling packages from software firms.

In some cases, Burroughs takes full responsibility for the package,



## COMPANY PROFILE

System compatibility is the order of the day as the new Burroughs prepares to rationalise its product line for the 80s. "We are in the business of selling solutions to problems rather than machines," claims manager

of product marketing, Bob Walker, "and that doesn't mean tying customers to one product line."

The company's computers are segregated into four distinct groups, starting with the B20

microcomputer and rising in power to the latest B7900 multi-processor. Recent enhancements to the top end of the range and entry level mainframes are designed to allow greater flexibility for users to upgrade

without having to abandon existing systems using compatible operating systems and communications protocols.

This extends to having a CMS (computer management system) cross-over version of the B900

office system at the top of its segment, enabling users to upgrade to an entry level B1900 small business system without rewriting software immediately, or changing peripherals. Keith Holder investigates

# Solutions to problems is product aim

BURROUGHS is taking an IBM-style approach to some segments of its product line, and plans "strategic purchases" of companies and equipment, particularly for the microcomputer and peripherals sectors. The first example of this is the purchase of Memorex.

This plugged the gap in Burroughs' disc storage devices, seen by industry observers as a weakness, without costly development programmes.

Brian Walker, product manager, peripherals, said the Memorex kit would be used mainly with large-scale systems.

Striving at the micro end, there is the B20. The machine is designed to operate as either a standalone unit or part of a distributed system. In the latter case, it has advantages over systems using a central processor attached to dumb terminals because each operator has access to processing power which can be used independently according to Trevor Westoby, product manager for this line.

In such a system, one B20 would act as a host for peripherals. It uses the Burroughs BTOS operating system, but plans are already at the advanced stage to offer CPM and MS-DOS as well. Westoby said that BTOS has been designed to

offer specific advantages to users, allowing different configurations, such as filing systems and communications, to be set up as key-stroke options.

Basic, Cobol, Fortran and Pascal will all run on the machine and the company's X-25 interface allows networking. Linking with IBM and Burroughs mainframe computers, with the ability to download data and programs, is possible. Memory starts at 0.5 KByte and is expandable to 512 KBytes using an auxiliary hard disc subsystem.

Westoby maintains that a lot of planning went into making the machine easy to use, not just with applications packages but also for setting up routines. Prices for standalone units start around £3,000. For distributed systems the cost per workstation is around £2,500, allowing for three MBytes of spooled memory.

It is not until the next step up, in the small business systems range covered by the B95, 96 and 930, that the option to progress upward in a structured way begins to emerge.

At entry level, the B95 uses the NBDS processor common to all other products which uses the computer management system (CMS) operating system/applications software package, through

the master control program (MCP) operating systems, which allows high-level languages to be used for portability of applications programs.

It will support from two to six terminals and comprises three modules housing the processor, data communications lines, disc subsystems and power supply. Up to five communications lines are provided, which include options for AIM devices, distributed control and SNA interfaces.

Main memory is 64 Kbit RAM, expandable to 512 KBytes, with up to 25.4 Mbytes from two disc subsystems. Two system printers can be supported, ranging from a daisy wheel model to a wide line printer, with a speed up to 500 lines per minute.

The MCP system provides two-way communication with the system available in most local languages. One of the main benefits claimed for this system is the ability to execute multiple programs simultaneously and run programs larger than the available memory size using a virtual memory system.

It also maintains an inventory of system resources. Using CMS, automatic execution of pre-defined sequences of commands and repetitive programs is said to be possible.

The next step up is the B96, which as the B95's big brother, expands the number of terminals supported to 20 together with increases in memory and printer options. Three versions are available which again use MCP and CMS.

The 96-20 supports one disc storage subsystem, while the 96-40 and 9680 support two. These are all fixed discs with capacities from 4.6 to 77.2 MBytes. In addition,



HUNT... "The computer management system lacks the sophistication of higher operating systems."

the B9498 high-speed tape drive can be used for data file back-up or applications processing.

Although the system is still limited to two printers, the range now includes letter quality, text

claims that apart from increasing system flexibility, this allows processor redundancy, and hence a high degree of system reliability. It is capable of supporting 32 communications channels, over 1,700 MBytes of fixed disc storage and 520 MBytes of removable disc rack. It also features the CP9580 communications extension and can be used as a network device. In this manner, up to 400 terminals have been run on one customer installation.

With the whole of this series, the benefit most stressed by the company is the ability to run CMS. This is an integrated system of operating and application software which allows users a logical upgrade path to the next level of machines, the B1000 range.

Programs can be run in either CMS or native B1000 mode concurrently, so that once a user has decided to upgrade, he can continue running old programs until they have all been converted from CMS.

Product manager, networking, David Hunt said that this feature was intended to provide an initial changeover option and CMS lacked the sophistication of higher operating systems used on larger mainframes. It does provide native programming facilities for Cobol, MPL-11, NDL and RPG 11, through the command and edit

language (Cande) and RPG-Edit. The B1000 series not only shares CMS commonality with the smaller systems but is also the first level at which the logic and information network compiler (Line) applications development system is available. This spans the rest of Burroughs' processors, including the B7900, and provides a complete DMS-11 relational database design with report and enquiry facilities.

The range is based on what Burroughs describe as fourth generation CMS commonality with the smaller systems but is also the first level at which the logic and information network compiler (Line) applications development system is available. This spans the rest of Burroughs' processors, including the B7900, and provides a complete DMS-11 relational database design with report and enquiry facilities.

Last year saw some enhancements to the software for the system, but these only apply to the latest versions of the B1800 and B1900.

The B1955 has the option of the CM 1900 TCS operating system for better communications handling. All versions support Cobol '75, Fortran '77, RPG and interactive basic compilers, and conversion aids for emulation, translation and interpreting. Program compatibility is maintained throughout the range.



It is not until the small business systems range that the option to progress upward in a structured way begins to emerge

and 650 line per minute line printers.

The B930, at the top of the range offers the same package but uses up to eight high-speed (three MHz) processors, Burroughs



WALKER... "Memorex will be used mainly with large-scale systems."

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	System 86/310-1	System 86/310-2	System 86/310-3
CPU	8086	8086	8086
RAM Memory	128 KB	256 KB	640 KB
Floating point	no	yes	yes
Mass Storage: Floppy Winchester	320 KB -	320 KB 10 MB	320 KB 10 MB
Multibus Expansion slots	6	5	4
Software Available:	iRMX86, (PL/M, Pascal, Fortran, Basic, C), Xenix (C, other languages available in 1984), system diagnostics and utilities, software support packages also available.		

\* 86/310-1 Manufacturer's Suggested List Price.

System 310.

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Just in life







# Burroughs learns how to live once more

From page 15

applications software development centre at Feltham, Middlesex, which employs 200 staff.

Under Blumenthal, Burroughs has set about trying to re-assert its dominance in the small systems market with the launch in 1982 of its 16-bit Intel 8088-based B20 range of microcomputers, developed by Convergent Technology.

Burroughs' co-ordinated push back into the small systems market in the US has been bumpy. There was a major change in its US marketing strategy in mid-1983.

In the US Burroughs had a two-tier distribution structure, selling to about 30 distributors which then built up a network of dealers. Last summer, Burroughs decided to drop most of its B20 distributors in the US and sign up dealers directly, saying the distributors had failed to meet their quotas.

According to US reports, US distributors blamed uncompetitive pricing, delayed product enhancements - particularly MS-DOS and EPM capabilities - as well as unfair competition from Burroughs' own direct sales force.

Blumenthal's success in turning the company around is reflected in the company figures, with total revenues rising 17.5% to \$3,405 million in 1981 and again by 22.9% to \$4,186 million in 1982. Net profit has fluctuated from \$82 million in 1980 to \$149 million in 1981, but to \$117 million in 1982.

Burroughs is holding its own compared with the rest of the "Bunch", the unfattering term for the second division (after IBM) of traditional mainframe vendors: Burroughs, Univac (now Sperry), NCR, Control Data and Honeywell.

Looking at 1982 total revenues, but excluding revenue from interest, a *Businessweek* survey last summer placed Burroughs fourth out of the five with over \$4 billion in revenues, the highest being Sperry with \$5,571 million and the lowest, NCR with \$3,526 million. Burroughs had the largest percentage increase in revenues compared with 1981, but also the biggest percentage drop in profits of the bunch.

Gartner Group's review of the top 30 US data processing companies for 1982, which looked purely at ITP revenues, put Burroughs at No 3 and best of the bunch, but behind Digital Equipment and IBM. The *Financial Times* list of Europe's top 25 computer manufacturers saw Burroughs climb from 10th to seventh place in 1982 with European data

processing revenues up 30.7% to \$970 million.

However, on the research and development side, although Burroughs boosted its R&D budget in 1982 by 24.8% to \$220.6 million, that still accounted for only about 5.4% of revenue, according to *Businessweek*. In comparison, Honeywell, NCR and Sperry each invested about 7.1% of their sales revenues in R&D.

The share price fell steadily from a high of \$87½ during the first quarter of 1980 to its lowest point in years of \$27½ in the fourth quarter of 1981. It climbed back to \$49 a share in the fourth quarter of 1982 and is currently hovering around the \$50 mark.

Blumenthal now has accomplished a change of direction for the company and significantly raised the morale and motivation of his workforce without having previously been in the computer industry. Before joining the Carter administration he had headed washing machine company Bendix.

But it caused no little surprise when, in August 1982, Burroughs appointed Bob King, formerly chief executive of Scottish and Newcastle Breweries, as managing director of its UK subsidiary, Burroughs Machines.

In the same month King was joined by David O'Brien, who had been UK managing director of Cray Research from 1979.

King is convinced that Burroughs is committed to the UK. "The company at the highest level wants to continue here, and that is why I'm here," he said soon after his appointment. "I would not be here if I did not believe in the company or that it is committed to the UK."

Burroughs' UK subsidiary has better claims than most US subsidiaries to be considered British. Its first manufacturing plant was opened in Nottingham in the last century - in 1898 - and it now has five manufacturing plants.

Burroughs' B90 small business minicomputer system was developed here and is manufactured at Cumbernauld in Scotland. The company claims that all the Burroughs equipment sold in the UK is either manufactured in the UK or the cost of it is covered by the value of equipment exported by the company. In 1982 Burroughs exported £53 million worth of goods from the UK.

In terms of size and manpower employed by Burroughs, 1980 was the peak year in the UK. There were 3,000 staff involved in manufacturing and 2,000 in marketing and support. There were also eight

manufacturing plants occupying 1.2 million square feet.

Now there are five manufacturing plants, around 2,000 staff involved in manufacture, and manufacturing area totals 867,000 square feet (including an extra 100,000 square feet at Livingston, announced last year).

The main factories are at Cumbernauld, Dumbartonshire, and Livingston in West Lothian. The former makes small computer systems, encoding equipment and printers and is taking over the manufacture of disc drives and cassettes previously made at its Glenrothes plant, which was one of those closed. The Livingston plant manufactures encoder systems for banking and financial institutions.

In addition to the manufacturing plants, Burroughs' software development centre at Feltham has expanded from 77 staff to 200 since 1980.

The Burroughs that King and O'Brien joined in August 1982 was beset by litigation. Customer dissatisfaction was such that 150 companies had taken out lawsuits against Burroughs by that time, mainly involving its B80 and B900 small computers.

On top of the quarrels with its users, Burroughs was also locked



KING... Keeping quiet about plans for digital communications striking.

government procurement policy as long as it's clear what it is," said O'Brien.

Very soon after his appointment, however, Burroughs quietly dropped the case after a top level meeting between Blumenthal, King, the Information Technology Minister Kenneth Baker and Sir Peter Cary, Permanent Secretary at the Department of Industry.

Assurances were given to the company that public sector contracts would be awarded in future according to EEC and GATT (General Agreement on Trade and Tariffs) rules on open tenders.

That case also resulted in a shift of policy at Burroughs, away from direct frontal assaults on the public sector. "We are now aiming primarily at independent institutions that rely on government influence and support rather than on central government," said O'Brien.

In the public sector, therefore, Burroughs has aimed at institutions such as magistrates courts and the police. The Police National Computer at Hendon comprises four 7000 series Burroughs mainframes.

King and O'Brien took steps to build up Burroughs' asset base in the UK and to rebuild customer confidence.

King concentrated initially on "gaining financial standing and strength".

"In the old days," he says, "computer companies didn't worry about having a sound financial base, but it is important to have a sound asset base. With it there is no way we'll vanish."

Burroughs' assets in the UK are now over £100 million, and King added that company borrowings

were now lower than two or three years ago.

Burroughs has given a lot of attention to promoting customer confidence, particularly through customer support and service, the two areas which generated the bulk of complaints.

"Eighteen months ago there were lots of letters from customers expressing concern," says King. "We only get a few letters now. Of course, we haven't solved all the problems, but there has been a dramatic improvement."

The lynchpin of that turnaround has been Burroughs' new real time fault monitoring systems, called Resource Control Centres which are designed to provide rapid and effective response to customers with problems.

The programme started in 1982 and there are now 30 such centres worldwide.

"Resource Control Centres are not just buildings with a computer to log calls," said Peter Loveder, general manager for post-installation service. "They are management alert systems and management information systems."

Loveder explained that users with problems have just one telephone number to contact the whole support organisation. On receiving the user's call, the Customer Service Engineering organisation takes on the problem. It is linked to the Resource Control Centres for advice - and, if the problem is complex, a series of alerts is sounded so that, if necessary, the problem can be dealt with on the other side of the Atlantic.

Being online also enables Burroughs to keep track of average response times. The number of responses made in under four hours has, according to Loveder, increased from 60% in 1981 to 67% in 1982 to 75% in 1983. And the average response times for mainframe users (B1000-B7000 series machines) decreased from 1.8 hours in 1982 to 1.3 hours in 1983.

Response times for microcomputer users with problems (B80 and B900 machines) decreased from 3.3 hours to 3.0 hours over the same period.

Another support function set up in the UK in 1983 was Burroughs' Technical Resource Centre, set up at the cost of £2 million at Milton Keynes. That organisation, opened last October, aims at streamlining the supply of parts.

"Having arrived on time with the help of the Resource Control Centres, we need to fix the problem on time," said Loveder. "The Technical Resource Centre ensures that our field operation is underpinned with centralised logistical support."

Burroughs is keeping up the emphasis on support organisations this year with a new Field Support Group, due to become operational in July. That group will give product support for systems and environmental software and will give special support for new products

until that support is devolved into the Resource Control Centres.

In addition to the major push to extend support and service operations, Burroughs in the UK has also set up two organisations to deal with the small business systems and micro markets: the Independent Sales Organisation (ISO) and the Computer Business Centres.

Last April Burroughs set up the Independent Sales Organisation. These are third party OEMs which sign up with Burroughs to sell value to small systems needed for small business not catered for by Burroughs' direct salesforce.

"There were 25 ISOs by the end of 1983 and Graham Morgan, general manager of sales and marketing for both organisations, expects there to be 70 or 80 by the end of 1984."

"Independent Sales Organisations are not dealers," said Morgan. "They open the box and add value. ISOs have backgrounds in vertical markets and plug gaps that we don't cover. Because they add value, they avoid clashes with the Burroughs direct salesforce."

The Computer Business Centres, seven of which are being opened this year, will form Burroughs' other prong in its efforts to regain the small business market. Small businessmen will be able to attend centres to learn about computers and talk to a cross-section of Burroughs staff with more emphasis on communicating with support staff.

The first six centres will be in Manchester, Leeds, Birmingham, Bristol and London (where there are to be two), with a further centre to follow in Glasgow.

Another plank in Burroughs' small business strategy will be an £11 million Education Centre which will open in April at Milton Keynes. The Education Centre will be headed by the ex-director general of army transport, and former assistant commander at Sandhurst, Major General William Allen. It will train third party marketing personnel responsible for selling Burroughs systems through ISOs.

What of the future? King is keeping quiet about Burroughs' plans for digital communications switching, although last year there were extensive talks between Burroughs and Plessey.

O'Brien emphasised the importance of networking in Burroughs' future strategy. "We now have a philosophy of offering solutions that can co-exist with other manufacturers' solutions," he said. "That is why we are developing networking compatibility and why we are very active on standards committees."

Using the analogy of the captain of a giant oil tanker changing his ship's direction, Blumenthal's course correction initiated in late 1980 has worked its way through the corporation so that now in 1984 Burroughs feels that it is pointing away from the shallows and is firmly on course for the rest of the '80s.

## PEOPLE



GPU Peripherals is expanding its sales management team by adding two new product managers. In charge of the Alaxell Magnetics media range of products comes John Haselden (right), formerly a sales manager with Shalfor. With product sales responsibility for printers is David Steadman (left) who comes from a sales management position at Centronics. Both will develop the direct dealer/OEM marketing opportunities. A promotion complex the changes; salesman Simon Howarth takes over the Western OEM sales region on the Haselden/Espirit range of VDUs. Shugart disc drives and DEI tape drives continue to be the domain of product manager Richard Watts.

Megabyte, the Horsforth-based computer systems company, has appointed Barry Seaman as sales manager, mini systems. Previously he worked for Data Sciences International of Leeds for 11 years. Len Cheah has been promoted to chief programmer. He joined Megabyte in 1981 and will now be supervising 20 programming staff.

David F. Thorpe has been appointed sales manager of Micromos Systems, a member of the Telemetrix Group. Thorpe will be responsible for all marketing and sales activities for Report, the new, intelligent colour computer terminal launched at Compee. He will also be responsible for sales of the add-on graphics boards.

Rob Harris (above) has been appointed managing director of NDC International, the London-based subsidiary of National Data Corporation of Atlanta, Georgia. He joins NDC from Visa International, the payment systems organisation, where he was business development manager.

The continuing growth of Cifer and the initiation of a second manufacturing site means that the board is being expanded to allow Terry Cosgrove to concentrate on his role as managing director and chief executive. Oliver Newland, currently a non-executive director, has been appointed non-executive chairman of the company. At the same time Graeme Robinson, previously with ICF, is joining the board as full-time finance director on a 12-month assignment.

Graham Stallard has joined Rediffusion Computers as materials manager. Previously, Stallard worked as production controller at Sangamo Transducers.

## DIARY

**JANUARY 20**  
The Paperless Office - ways and means of making information technology productive in modern offices. Seminar by Oyez Scientific and Technical Services, London. Details: Helen Raquet, 01-236 4080.

**UK APL User Group** annual general meeting, Imperial College of Science and Technology, London. Plus APL - the natural language for graphics. Details: Dick Bowman, 01-248 1202.

**JANUARY 23**  
Informal meeting, Databases on micro? at Castle Hotel, Norwich. Details: BCS, 01-637 0471.

**JANUARY 23-26**  
IBM VSE Advanced Operations and Problems Analysis. Course presented by Protocol Operations, presented by Protocol Operations, Royal Scot Hotel, London. £340 plus VAT.

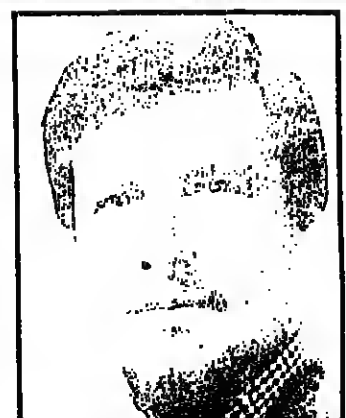
**JANUARY 24**  
Manufacturer visit featuring KAR-4000 and Komstar. Kodak, High Holborn, London, 9.45am. British Computer Society Microforum Group. Contact Chris Marles on 01-250 3217/8.

**JANUARY 25**  
So You Think You Know How to Select Staff? British Computer Society Manchester. Speaker, George Pedney, NCC, Oxford Road, Manchester, 6.15.

**Word Grammar and Modern Linguistics.** British Computer Society Natural Language Translation Group. Speaker, R. A. Hudson, University College, King's College, Strand, London, 6.00.

Visit to North Tyneside Information Technology Centre. British Computer Society Newcastle. Contact Ian Rees, North Shields 575029.

Due to the success of its European operations, Megatek Inc is expanding its distributor network to venture outside the existing markets covered. As part of this plan, the European subsidiary based in Lausanne, Switzerland, is now taking on responsibility for all sales and marketing outside the US. Michael Schwab, who previously headed up Megatek in Europe, now assumes responsibility for the international operation, including sales in the Far East and South America.

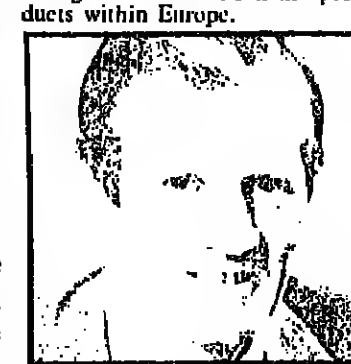


Martin Orchard-Webb of Stroud, Gloucestershire, will soon be flying out to Fiji to take up a post as senior systems analyst and programmer with the Government of Fiji. He was recruited by the Overseas Development Administration under Britain's aid programme. Orchard-Webb went to Papua New Guinea to work for the government there for two years. Since 1980 he has been back in Stroud at the McEvoy Division of Smith International.



Roy Chance (left) has joined MSA to support the company's international payroll and personnel system. Previously he was systems consultant at Zeda Computer Systems, and senior business analyst at Owen Computer Services. Alan Seale (right) joins MSA as general ledger customer support consultant. He was project leader implementing the general ledger system at Roche Products.

Mike Evans (below) has joined Geac as divisional manager for general systems and communications products. He will be responsible for all sales and customer marketing of networking and communications products outside the existing product groups of libraries, retail banking, wholesale banking, leasing and insurance. He will also be responsible for all OEM sales of general systems. John Burton will be responsible for development and product marketing of communications products within Europe.



Tony Sanders has been appointed sales operations manager of Golden Wunder and HP Fonds. He was formerly O & M manager for both companies.

AIM Cambridge Limited, the TEK Group's technical consulting subsidiary, has appointed Roger Guacomb as electronics group leader.

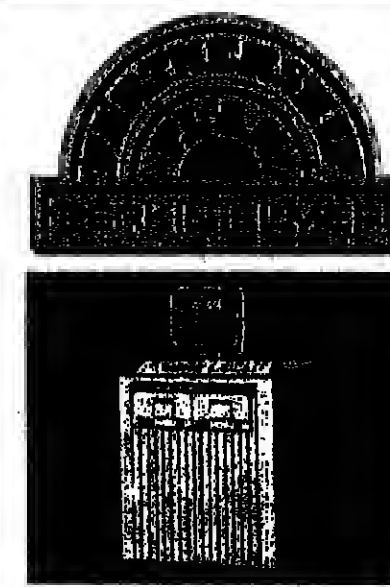
## Just unleashed. The new 3205, the 32 bit Supermini that eats 16 bit micros alive.



From the Perkin-Elmer 32 bit specialists... a compact piece of computer engineering with a formidable processing capability. It's designed for the end user and the OEM, who like the price tags on 16 bit micros but is hungry for the real meat of a full 32 bit machine.

**Move up when you are ready.**  
Don't let either the price or the size delude you. The 3205 has a true 32 bit architecture with the growth potential and the total upward compatibility that is key to the Perkin-Elmer Family. There's a choice of hardware and software packages with Perkin-Elmer 32-bit UNIX, and Reliance Plus the acclaimed Perkin-Elmer relational database. A complete system with 512K memory and 50MB disk starts at under £20,000. For the OEM and system integrator the CPU and memory can be as low as £2,460.

**OEM's. Come and hunt with us.**  
The 3205 provides a great opportunity for OEM's and system builders in opening up a rich territory of new specific application



areas where 16 bit micros just can't compete. In the Perkin-Elmer Partnership Plan we'll supply you with marketing back up, training, software and hardware advice. We'll actually lead through sales leads exclusively to you. Because we need your help in exploiting a major business opportunity for both of us.

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CMS

Traditionally a business equipment manufacturer, Burroughs moved into the vacant computer industry.



# APPOINTMENTS

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Box nos. C5 extra. Address back to c/n Computer Weekly, Classified  
Dept., Quadrant House, The Quadrant, Sutton, Surrey, SM2 5AS.

## Systems Support Analyst

City

Our client is the holding company of a number of operating subsidiaries which together form an integrated group engaged in oil and gas exploration and production and in the refining, transportation and marketing of crude oil and petroleum products.

The initial responsibilities of the Systems Support Analyst will be to write user manuals and training material for a sales order processing system and assist in the development and implementation of an accounting package.

This is a user orientated position and the successful candidate must possess excellent communication skills as well as good

£10,000 - 12,000

planning and organisational ability. A sound knowledge of DP principles and concepts is essential and experience in Wang VS systems and telecommunications will be an advantage.

A good understanding of CPU to CPU remote networking would be an added advantage.

The successful candidate will be offered a salary relating to qualifications as well as a comprehensive benefits package.

Find out more - contact Knight on 01-491 4706 quoting Ref YY404.

**Knight**

Confidential Reply

## COBOL Programmers

Bedford

Our client, a leading manufacturer of electrical control equipment, has recently upgraded its computer hardware to an IBM 4341 operating under DOS/VSE. This reflects the increased importance of information systems to the company. There is in place an integrated suite manufacturing and commercial systems based on DL/I and CICS.

To help the next stages, which includes specific emphasis on a real time manufacturing control system, they require additional COBOL Programmers to join their existing project team. A knowledge of CICS and/or DL/I would be a distinct advantage.

Attractive salaries are envisaged based on knowledge and experience and will be well in line with market rates. The company

benefits include Superannuation and Life Assurance scheme, social and sports facilities and five weeks annual holiday. These positions offer interesting work in a pleasant environment with good opportunities for career advancement. Re-location expenses will be paid where appropriate.

Find out more - contact Knight on 01-491 4706 quoting Ref YY405.

**Knight**

Confidential Reply

## ICL COBOL Programmer (Money Brokers)

City

Our client is a major International Money Brokers based in the City. Their computer centre currently houses an ICL 2904, ME20 and an ICL System 25 (now being installed to be used as a development machine. Plans are underway to increase their hardware by the end of 1984.

The COBOL Programmer will be engaged in the development of Financial Broking systems based on the ICL System 25. This will involve working as a member of a new team.

Candidates should have upwards of eighteen months ICL COBOL programming experience gained in a commercial or financial environment, preferably on ICL System 25.

to £10,000

The company will present the opportunity for the Programmer to progress into an analysis role. The successful candidate will be rewarded with a benefits package which will include a non-contributory pension scheme, season ticket loan and medical health insurance.

Find out more - contact Knight on 01-491 4706 quoting Ref YY403.

**Knight**

Confidential Reply

## COBOL Programmers

A move into Training Nationwide

Our client is one of the largest providers of commercial computer training, both for private industry and the MSC sponsored training programmes. Their curricula cover a wide range of specialist courses encompassing both hardware and software training.

To continue their policy of expansion, our client is seeking articulate and enthusiastic people with the following qualifications:

- \* COBOL Programming in a commercial environment
- \* BASIC an advantage
- \* Broad understanding of hardware
- \* Knowledge of structured design techniques desirable

£10,000

Candidates will have an aptitude for teaching and be able to demonstrate good communication skills. The training centres are located in pleasant working surroundings and successful candidates will join a first class team of professional tutors enjoying an interesting and satisfying career.

Find out more - contact Knight on 01-491 4706 quoting Ref GK624.

**Knight**

Confidential Reply

**Knight**

01-491 4706  
24 Hours

**Knight Computer Services Ltd**

14 Old Park Lane, London W1Y 4NL

PART OF THE **HUNTERS-KIL** GROUP

## Programmer Analyst/Programmer (International Banking Systems)

Following major success in introducing their real-time International Banking Information System (IBIS) to the UK and European markets, Tymshare (UK) is now expanding its Customer Support Group with the addition of a Programmer and an Analyst/Programmer.

In addition to providing customer support and tailoring the system to suit client requirements, the successful candidates will be involved in major new developments of the IBIS system which may involve some overseas travel.

Applicants should be able to demonstrate a background in either Banking or Financial

to £10,000 to £12,000 + Car Central London

sociators with programming experience in Basic +2 ideally using VAX hardware. In addition, self confidence in dealing with customers and a high degree of initiative will be of importance.

These positions will suit dynamic individuals who wish to be prosecuted with a ground floor opportunity in a progressive and expanding organisation.

Find out more - contact Knight on 01-491 4706 quoting Ref GK623.

**TYMSHAREUK**

## Analyst/Programmer

Harrow

Our client is a multinational organisation engaged in the supply of materials for the construction industry.

Their computer centre supports a wide range of commercial applications based on IBM System 38 and Honeywell 62/50 hardware.

A variety of developments projects are planned covering many areas, including a sales forecasting system.

Ideally your experience will include the following skills:

- \* IBM Systems 38 (or other GSD)
- \* RPG3 (or RPG2)
- \* Commercial systems
- \* Client liaison

£12,500

The successful candidate will receive an extremely good earnings package, excellent promotional prospects, and the opportunity to join a progressive industry leader.

Find out more - contact Knight on 01-491 4706 quoting Ref RC351.

**Knight**

Confidential Reply

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Recruitment Division  
Free Post 16, W1E 8JZ

Name

Address

Tel no (Home)

(Work)

Position Sought

Ref no. if applicable

## SENIOR APPOINTMENTS - £14K +

## Computer Systems Manager

£16,000 plus Car plus Major Benefits

We are a major UK Manufacturing Distribution Company, with several Brand Leaders, and a substantial growing Export Business.

From our modern UK headquarters, based in the N. Home Counties, we provide a central computer co-ordination facility controlling centres throughout the British Isles.

Our dynamic expansion record and ambitious '84 Corporate plans have created an urgent need to expand the current scope of our computer usage dramatically.

To address this requirement we wish to appoint an experienced Computer Systems professional to head-up the next critical phase of our Development.

Our profile calls for an experienced Systems Manager, with a high degree of Technical competence and management skills. Demonstrable ability to understand the 'business needs' (manufacturing and distribution problems in particular) together with highly developed User-liaison skills are essential, since the provision of a first-class service to the users is the priority.

A strong association with IBM System 34 and/or System 38, and working familiarity with RPG will be highly advantageous.

In order to secure the highest calibre individual available, an extremely attractive package is offered, including a high base salary, annual bonus, Company car (plus petrol allowance), pension, life assurance, B.U.P.A., four weeks holiday and relocation package if appropriate.

For a private and confidential discussion on this opportunity contact **Nick Reid** on 01-835 0671 during office hours or 01-844 1973 evenings or weekends.

Alternatively send your C.V. immediately to him at the London office.

**N. Home Counties**

Technical, Sales & Management Appointments

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# Project Managers

New Appointments

SOUTH EAST  
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dependent upon experience in  
Merchandising, Retailing, and Point of Sale Systems

for a major fast moving consumer goods group with a commitment to develop and implement a whole range of new systems to meet burgeoning business information needs.

Reporting to the Systems Development Manager the appointees will be responsible for confirming, developing and implementing retailing, merchandising and point of sale systems, as relevant to experience and preference, utilising new and advanced hardware and software technology.

You are a senior systems analyst or project leader experienced in POS, merchandising, or retailing systems development from feasibility to in-store installation in a large scale high technology environment. The systems you will develop and implement will form the basis for further significant developments towards the fullest possible computerisation of the retail business management and decision processes.

A major capital investment programme in high technology is underway, and these appointments offer green field opportunities to move into managing front edge business systems automation.

Dependent upon the appointees location preferences, the appointments will be situated either in the South East or the North of England.

Excellent starting salaries will be offered at all levels dependent upon experience, and persons with the required breadth of experience and potential can look to commencing around £22,000 plus a company car.

There are also a number of positions at PROJECT LEADER level available which could be of interest to Systems Analysts with relevant retail systems experience seeking their first significant move into project management, sooner than later.

Please send a ONE PAGE career history list, or a CV, or write or telephone for a Personal and Professional History Form, to SARAH KENNEDY, Executive Selection Division, quoting reference number GW1180, at the address below. Applications are invited from either sex.

**BIS Applied Systems Limited**  
York House, 199 Westminster Bridge Road  
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**BIS** Applied Systems



# SENIOR APPOINTMENTS - £14K +

## TECHNICAL SUPPORT CONSULTANTS

London Base £14,000 + Car + Bonus Scheme

Our Client is a World leader in systems software who have developed a unique and comprehensive range of IBM Systems Software products, acclaimed as being the most advanced in today's market, with a well earned reputation for excellence. Undoubtedly, part of their success is owed to this market edge, though clearly in evidence is a well trained and highly motivated team of product specialists and sales executives who have the support of skilled technicians.

Due to the recognition of their products, their expansion plans for 1984 are extremely exciting. They, therefore, require a number of skilled technical support consultants to be based from their head office in London.

There are two main areas where opportunities exist: Firstly, within the section that supports existing clients, there is a need for a specialist who enjoys the 'hot-line' environment. This is an in-house position requiring a person with IBM large systems and low level ASSEMBLER experience who can read dumps, assess a problem analytically and provide a solution to clients' problems over the telephone.

Secondly, support is required within the 'new client services' area: Here the person would work in the field providing an interface to sales and, as well as being technically sound, should have the ability to give presentations, build up good client relationships, giving support on the products through to implementation.

Here are opportunities second to none for skilled, ambitious professionals.

In the first instance contact our advising consultant Pam Hale on 021 236 1999 (24 hour answering service) or 0908 606831 (evenings and weekends). Alternatively submit a curriculum vitae to the Birmingham office.

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attracts the best

## Systems Manager

M Maidenhead to £16,000 + Car

Leasco Software Limited is undoubtedly one of the UK's leading Computer Systems Companies and has an enviable record of growth and success. Because of further growth our Commercial Systems Division Production Group needs to recruit a third Systems Manager.

Reporting to the Group Manager you must be capable of running several project teams and directly supervising Project Managers. Initially the post will involve controlling a variety of Leasco managed activities for a single major client, including Leasco's own software development, support and consultancy, as well as the activities of hardware and software subcontractors. In the longer term involvement with more than one client can be expected.

Proven skills in planning, team building, staff motivation and effective client liaison will be required. Experience in business applications is vital, and experience of MIS Systems Implementation (especially in Central Government) will be an asset.

In addition to the salary and car you will enjoy a first class range of benefits including profit sharing, free lunches and a subsidised pension and permanent health scheme.

Please telephone or send your c.v. to: Patricia Male, Personnel Officer, Leasco Software Limited, 150-152 Bath Road, Maidenhead, Berkshire SL6 4LD. Tel: (0628) 23394.

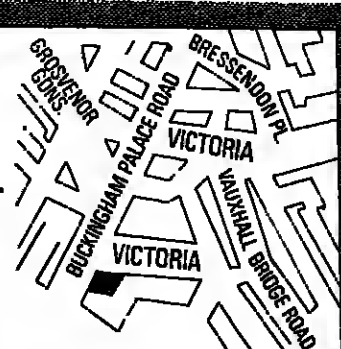
edisco  
SOFTWARE LIMITED

# SENIOR APPOINTMENTS - £14K +

TUESDAY JAN 24th

THE GROSVENOR HOTEL  
BUCKINGHAM PALACE RD.  
VICTORIA SW1  
4.00 pm - 8.00 pm

Drop in for  
a drink and a chat.



Seabury's is the UK's leading food retailer. In our last financial year sales increased 17%, profit was up 20% to £107 million and we created an additional 3,300 jobs.

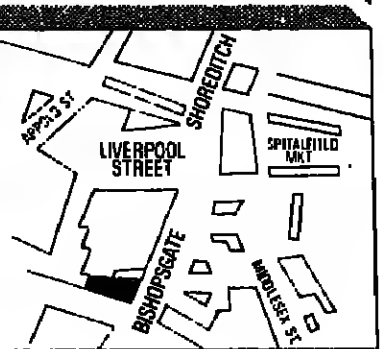
We'll be here

We'll be here

WEDNESDAY JAN 25th

THE GREAT EASTERN HOTEL  
LIVERPOOL STREET EC2  
4.00 pm - 8.00 pm

Drop in for  
a drink and a chat.



## DP PROFESSIONALS

### four routes to success

Come along for an informal discussion

Our Systems Department is vital to our on-going success and is rapidly expanding to satisfy business growth. We are currently changing from ICL to IBM hardware and our present configuration comprises IBM 3033 and Atlas 10 mainframes.

We have a major commitment to a significant on-line database systems programme covering distributed stock control, purchasing and management information systems. We are now looking for additional DP Professionals to help us develop our business into the 1990's.

Call in to one of our open evenings, we will be pleased to meet you and discuss in greater detail the outstanding career opportunities we have to offer.

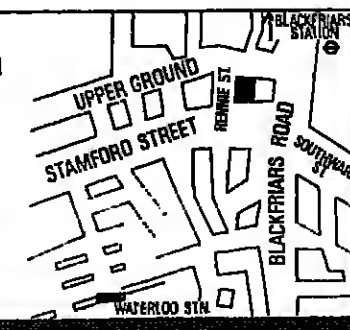
If you can't make it on any of the dates, please ring Lorraine Catherides on 01-921 6047 for an application form or to arrange an informal discussion with our Systems Managers.

Alternatively, please forward a detailed c.v. to her at J. Seabury plc, Wakefield House, Stamford Street, London SE1.

THURSDAY JAN 26th

SAINSBURY'S HEAD OFFICE  
STAMFORD HOUSE  
RENNIE STREET  
OFF STAMFORD STREET, SE1  
4.00 pm - 8.00 pm

Drop in for  
a drink and a chat.



We'll be here

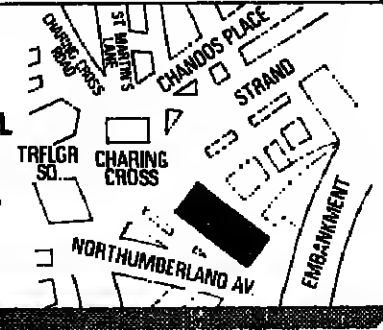
We'll be here

For all posts, excellent benefits include:  
★ interest free season ticket loan, after six weeks ★ subsidised restaurant  
★ profit sharing after 2 years' service ★ pension scheme  
★ share option scheme after 3 years' service  
★ relocation assistance, where appropriate.

FRIDAY JAN 27th

THE CHARING CROSS HOTEL  
STRAND WC2  
4.00 pm - 8.00 pm

Drop in for  
a drink and a chat.



## SAINSBURY'S

## ADVANCED INFORMATION TECHNOLOGY AND KNOWLEDGE ENGINEERING OPPORTUNITIES TO JOIN ONE OF THE UK'S LEADING GROUPS. SALARIES TO £18K.

SPL International's Research Centre is the Company's corporate focus for advanced information technology. The Centre's work involves the design, development and marketing of software tools and technology for use within the Company and for its clients in the UK, Europe and the rest of the world. During 1984 the Centre will be making investments in new Knowledge Engineering tools and advanced knowledge-based application.

In support of this programme applications are sought from individuals who have experience of and can demonstrate achievement in one or more of:

### KNOWLEDGE ENGINEERING

Consultancy, design or implementation skills in K.E. including the development of at least one significant application preferably in sensor data processing or with a large MMI component. For senior positions a broad group of KBS techniques is essential.

### SOFTWARE TECHNOLOGY

Design and implementation of advanced interactive software environments including object oriented, applicative, list processing and logic programming languages, relational database and expert system shells.

### EMBEDDED SYSTEMS

Consultancy or project management skills in embedded applications including plant monitoring and control, EM and acoustic sensor data processing, tactical simulation and military or related command and control systems.

The Research Centre is located in an attractive part of the UK at Abingdon, near Oxford. It maintains strong links with other SPL Divisions, both in the UK and continental Europe. Extensive computing facilities are installed including a powerful VAX configuration, PDP service machines and a wide variety of micro. Software environments include POPLOG, PROLOG, LISP, ADA, SAGE, ALGOL68, PASCAL and RTL/2.

To applicants with the right experience, motivation and innovative skills these opportunities offer:

- ★ Competitive salary with relocation as appropriate
- ★ Excellent career prospects in a growing organisation
- ★ Scope for innovation at the front of current thinking
- ★ Visibility and recognition of individual effort in small teams.

Write with c.v. or call: Cheryl Carter, SPL International Research Centre, The Charter, Abingdon, Oxon. (Tel: 0235 24112).

## GENERAL SALES MANAGER

superb opportunity for young professional

£16,000-£18,000 base £35,000 total 2-3L car

Our client, a division of one of the world's most prestigious companies, is a leading vendor of switching products. With an excellent product range and high quality reputation, they now seek a young Sales Manager of the highest calibre to sharpen their sales and marketing profile.

Reporting to the Executive Vice-President and controlling four sales groups, you will be responsible for vigorously directing all sales efforts. With new products to be launched in the spring, you will be expected to fully exploit the market potential within new and existing business sectors.

Essentially, therefore, you will be an aggressive and tenacious sales professional, aged between 28-35, and with a proven success record. You will be a galvanising leader, able to hold your own in a variety of sales and management situations. Previous experience in communications or management is not essential provided you can demonstrate the above qualities.

This position surely represents an outstanding career opportunity for the ambitious young sales professional.

For further information, contact Paul Child on (07535) 56155 or write to:  
Kramer Westfield Associates Ltd., 23 Victoria Street, Windsor, Berks. SL4 1HE.

Recruitment Consultants to the Communications Industry.

Kramer Westfield

## REAL TIME SOFTWARE DESIGNERS

£15.70 to £20.40 PER HOUR

### URGENTLY NEEDED

Experience in REAL TIME Systems  
Transaction Processing Systems  
Process Application with Mini Computers  
Software Support Tools

## REAL TIME SOFTWARE PROGRAMMERS

£13.60 to £15.60 PER HOUR

Minimum 4 years REAL TIME experience in Assembler Languages  
in Communication, Switching Interface

G.A. Mini Computer Experience Preferred

Phone or write to:

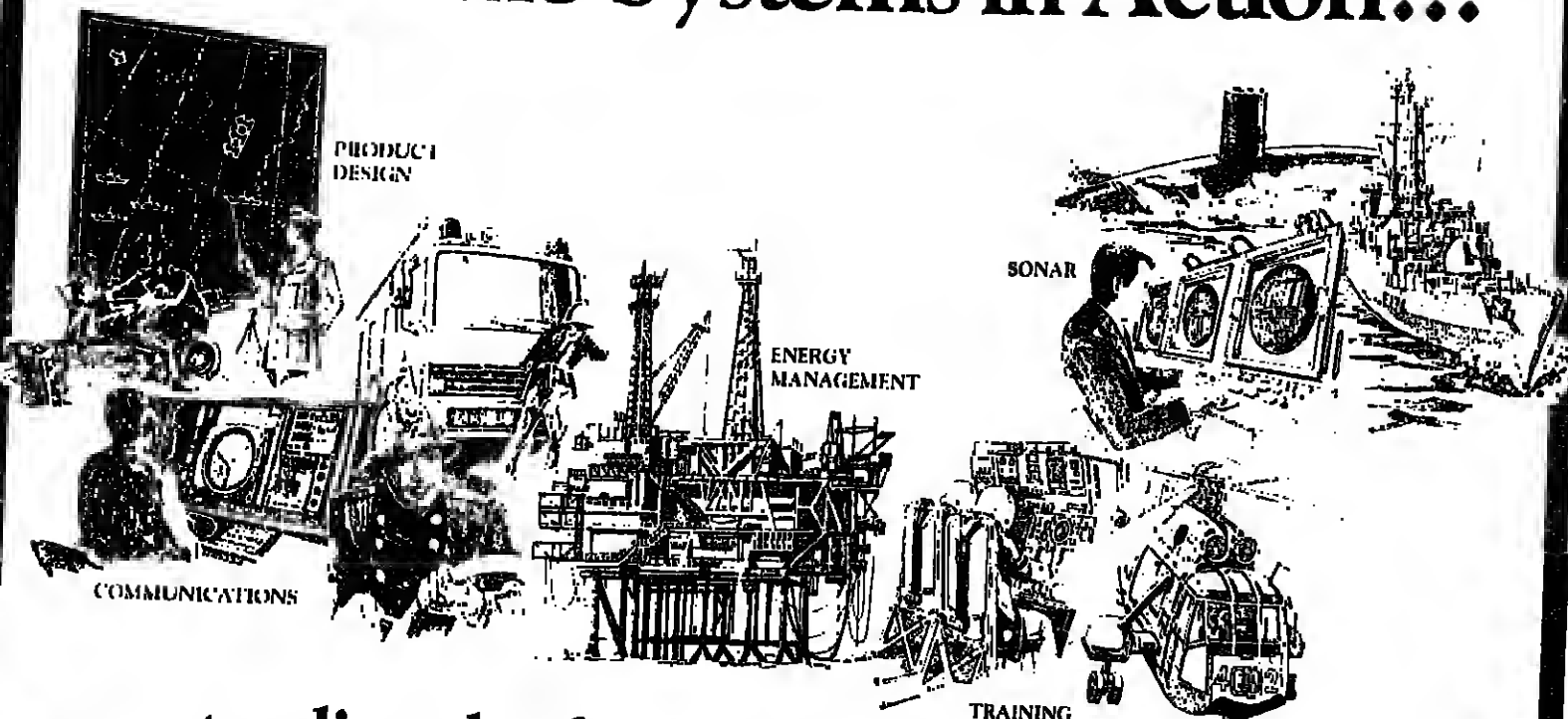
Butler Service Group Inc.

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Telephone: 01-884 0424

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# Real Time Systems in Action...



## ...extending the frontiers of systems technology

Through sound practical engineering innovation in systems and product design, we are helping Britain to lead the world in computer applications. Our influence and continuous involvement at the leading edge of this new technology is internationally acclaimed, pioneering new developments in real time computer systems and a wide variety of... future generation Sonar, Training, Communications, Energy Management systems and products... for commercial and military applications.

As an essential element of our exciting growth plans for 1984 we are very interested in hearing from... **HARDWARE & SOFTWARE ENGINEERS and SPECIALISTS**... with qualifications in an Engineering or Scientific subject and real experience and ambition in System Design.

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covering the complete spectrum of activity.

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Applicants should write with full personal and career details to Confidential Reply Service, Ref ACP 8914, Austin Knight Advertising UK Limited, London, W1A 1DS.

Applications are forwarded to the client concerned, therefore companies in which you are not interested should be listed in a covering letter to the Confidential Reply Supervisor.

**Austin Knight Advertising**

# The Hunterskil Group of Companies

HUNTERSKIL SOUTH

H. Programming & Systems

The Hunterskil Group provides essential computer skills across Operations and Systems/Programming to installations throughout the UK and Overseas. Contract and Permanent opportunities exist throughout our Group and the following are some of the immediate contract requirements at Knight Computer Services and Hunterskil South.

Knight

HUNTERSKIL  
Hunterskil International Limited

## CONTRACTS

### Systems and Programming

- \* **ICL 2900 VME Programmers and Analysts** with TPMS and IDMS experience. £400 to £500 per week depending on experience.
- \* **ICL 2900 VME Technical Support personnel** preferably with IDMS/TPMS and BASE experience £500 per week. Start immediately.  
We are always keen to hear from people with the above experience.
- \* **PRIME Analyst with on-line experience for 6 months assignment.** £500 per week.
- \* **VAX, VMS, DBMS Programmer** for 6 months contract start immediately. £425.00 per week.
- \* **Honeywell COBOL Screenwrite programmers.** £420.00 per week.
- \* **QUERY/FOCUS** 2 years implementation experience for 1 to 2 year contracts. £500+ per week.
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## Operations

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- \* **MVS/JES2 Senior Operators** with IMS experience. £234.00 per week.
- \* **HP3000 MPE/4 Operator** for forthcoming requirement. £200.00 per week.
- \* **IBM System 38 Operator.** Inclusive of expenses £240.00 per week.
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**HUNTERSKIL SOUTH**  
Specialist Computer Staff

**(0628) 75551**

Chelworth House, The Broadway, Maidenhead, Berks, SL6 1LY

001 Reg No SE1390

## CONTRACTS

### Systems and Programming

**PL/1 Opportunities - MVS**  
We have a number of positions for PL/1 + DL1 programmers for 3-6 month contracts and PL/1 + CICS programmers for 6-12 month contracts. All the projects are on financial applications and will be based at our Customer in Middlesex. Ref: K1347

- ICL 2900 VME COBOL** - Some positions with IDMS/TPMS
- DEC VAX 11/750, VMS, BASIC V.9 (ess), DATARIEVE** - Beds
- DECNET** - Communications System Designer - Hants
- MUMPS Programmer and Systems Programmer** - Germany/Switzerland
- Process Control Real Time** - Long term a.s.a.p. - Hants
- IBM 4341 IMS DBDC support** - 3 months extendable - Beds
- ICL 595 or ICL DRS** all levels + all areas
- HP3000 COBOL** with HP Software Package exp - Brussels
- IBM DOS/VS Systems Prog, 2 yrs CICS/VS (Perf. Mon. VM/CMS DL1 useful)** 6 months + 1, BRUNEL

Ref: P1254  
Ref: E1343  
Ref: E1354  
Ref: E1294  
Ref: S1110  
Ref: E1348  
Ref: S1333  
Ref: P1307  
Ref: R1351

## Operations

- CASE DCX MULTIPLEXORS & MODEMS** - Network Person for immediate 1 year contract in SE London
- ICL G III/VME Operators** to start in near future on long term assignment in E. London.
- IBM 4341 VM-CMS DOS/VS CICS** - Senior Operators to start now for 4 month contract.
- ICL M29 TME IDMS** - Networking and operating for indel. period to start in near future.
- ICL 2904 EXEC 35** - Operators to work on conversion in Middlesex for indel. period, starting end Jan. - begin Feb.

Ref: LF12  
Ref: LF13  
Ref: LF14  
Ref: LF15  
Ref: LF16

Knight

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**01-491 4706**

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Other ingredients include an exciting career environment which is expanding fast, often leading to rapid promotion, hence our current vacancies; highly competitive salaries, and all the other benefits to be expected from one of the world's top brewing/catering companies.

**Programming Team Leaders**  
**Technical Support Programmers**  
**Senior Analysts/Analysts**  
**Senior Quality Assurance Analyst**

The most important requirement for programmers is a good knowledge of COBOL gained in an IBM background. Experience with CICS and DL1 would be useful, although training is available where necessary in the use of on-line and database techniques.

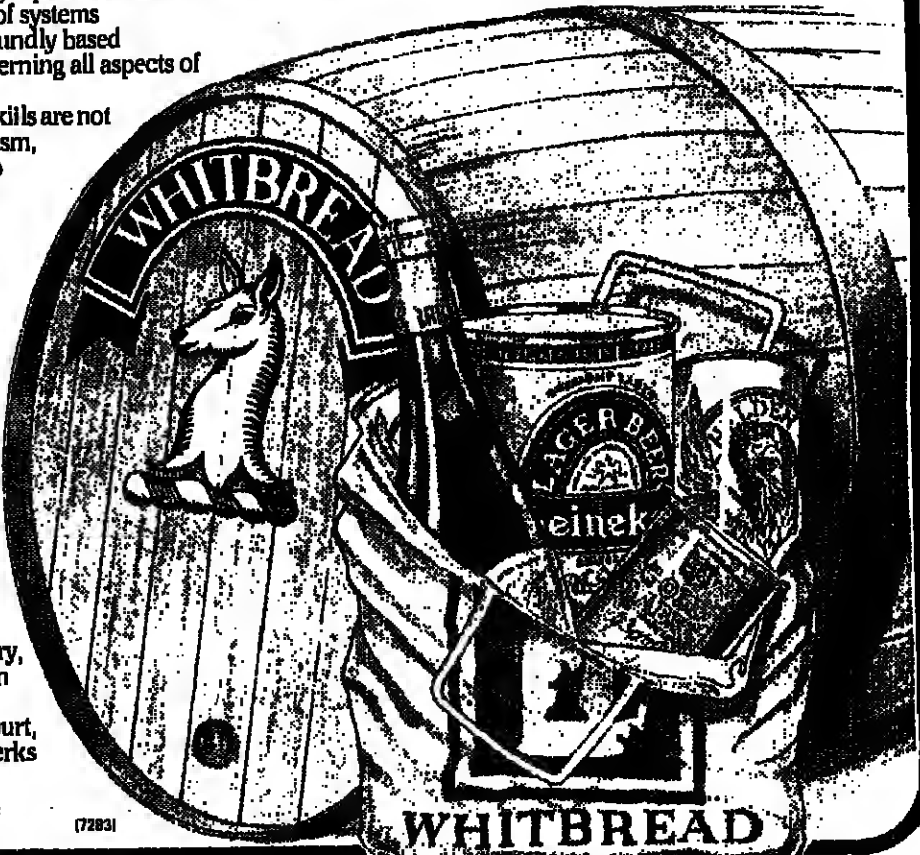
For the analysts positions we are looking for at least two years' sound systems experience ideally in a CICS/DL1/MVS environment.

For the quality assurance analyst position we are looking for broad experience of systems development together with soundly based judgement and opinions concerning all aspects of quality.

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(7283)

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## Freelance Assignments

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- ★ Senior Programmers
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These assignments start over the next six weeks. Please contact me NOW regardless of availability.

Please ring: Sheila Fox  
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(7288)

كنا من الجاهل



# From one Computer Professional to another...

In the computer business, it takes a professional to really appreciate another professional. That's why at P & O Computer Services Recruitment Division, you'll find we speak your language.

Because we're a comprehensive computer organisation in our own right, we're familiar with every aspect of the business - our prestigious client list reflects our own reputation in the industry. And, as a computer professional on the move, that can only mean good news for you.

This is a small selection from the many positions available. If your qualifications are appropriate to any, we'd like to hear from you.

For an informal discussion or for more information, telephone Lynne Smith, Rickmansworth (0923) 771111 ext 34. Talk to the professionals - P & O Computer Services Recruitment Division.

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IBM System 38	RPG	Middlesex
DG Systems	AOS & INFOS	SW London
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Cobol Programmers (all levels)	IBM 4331, IBM 4341, CICS, DL 1 (IMS/VM/CMS exp. useful)	London, Herts, Essex, Bucks	to £13K
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DME essential  
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## COMPUTER OPERATORS

c. £8,400

Bankers' Automated Clearing Services provides an Electronic Funds Transfer (EFT) Service to the Banking Industry. Based at Edgware, North London, our Computer Centre currently consists of three ICL 2980's, two ICL 2986's and Telecommunications Equipment.

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## INSTRUCTORS -OFFICE SYSTEMS

London  
Attractive salary + car

Weng's outstanding success as a computer company is based on a unique office automation product strategy utilising six key technologies: text, data, voice and image processing, networking and human factors. It is in the last, but not least, of these areas that our education function has a major part to play, by ensuring that customers achieve an optimum interface between their Weng equipment and the users who operate it.

This post will cover all Wang's Office Automation Systems, both VWP and DP. As well as conducting customer courses, you will be involved in briefing and updating our own sales and support staff, and in

developing course content. The post will be based in the West End, although occasional travel will be necessary. A thorough knowledge of OA systems and previous teaching/training experience is required: this may have been in a technical support role rather than as an instructor.

In addition to a very competitive salary, benefits include a car (travel to customers premises is involved), BUPA, pension, life assurance and stock purchase schemes. Please send full CV to Christine Townsend, Wang (UK) Ltd., Weng House, 661 London Road, Isleworth, Middlesex TW7 4EH or tel. 01-847 1954 for an application form (24-hour service).

**WANG**

The Office Automation  
Computer People.

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**PROGRAMMER/ANALYST £8,300-£9,590 p.a.**  
(Review pending)

The successful applicant will play a major role in the investigation, design and implementation of new systems and must possess the ability to communicate effectively with all levels of user. A knowledge of on-line techniques and/or database principles would be an advantage.

**PROGRAMMERS £7,000-£8,050 p.a.** (Review pending)  
Candidates should have at least twelve months' in-depth experience of either NEAT/3 or COBOL.

An exciting career is offered to DP professionals who are prepared to work on their own initiative and accept the responsibilities these positions demand. In addition to a competitive salary structure, these positions also offer the following benefits:

- ★ Concessional mortgage facilities
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- ★ Permanent health insurance
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- ★ Subsidised staff restaurant
- ★ Free, easy car parking
- ★ Relocation package where appropriate

In the first instance applicants should write, giving full personal and career details, including current salary, to:

Ray Jones, Computer Manager  
BIRMINGHAM AND BRIDGWATER BUILDING SOCIETY  
53/57 Wake Green Road, Moseley, Birmingham B13 9HX

**BIRMINGHAM BRIDGWATER**  
BUILDING SOCIETY

## MIS Manager

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Our client has an enviable reputation at the forefront of the reprographic industry. This wholly owned UK subsidiary of a worldwide office equipment organisation is one of the leading manufacturers of specialised paper and Computer Aided Design equipment.

They currently require a Management Information Service Manager to head up the Data Processing Department and be responsible for the introduction, development and implementation of manufacturing and financial computer systems.

Candidates will have considerable Project Management experience and must possess a sound Data Processing background including knowledge of telecommunications. Equally important is a strong personality with the necessary drive and initiative to provide decisive management and the ability to communicate effectively at all levels.

If you wish to further your career potential and take advantage of this exciting opportunity which includes all the benefits of a major company, please telephone or write in the strictest confidence quoting ref DF7450.

**Lloyd Chapman Associates**  
123 New Bond Street, London W1Y 0HR 01-499 7761

## Software Engineers Who've fallen on hard times...



Cord Designs Limited

ZEUS HERMES DIVISION

We don't mean those with holes in their clothes, hunger pangs and bare feet - if they exist that is. No, the people we want to talk to are the ones who have been suffering from lack of scope, poor facilities and project boredom. You're ambitious Software Engineers, and we have your greatest incentive.

As a major international systems consultancy, Cord can offer you everything that reflects professional excellence. Our specialisation is in the high technology areas of computing means that our expertise is in demand for short term consultancy up to million pound projects. We are dynamic, profitable and developing fast. What's more, we understand exactly what makes someone like you tick.

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Matching our pace means being bright, presentable and outgoing. Aged 25-35 you're probably a graduate, although our emphasis is primarily on experience, which must have been gained over at least 3 years in a relevant scientific or technical background, where you will have become familiar with technical and real time languages such as Assembler, Corel or Pascal. All this will bring you career development fast, with early management responsibility.

Salary wise, we're talking up to c£15,000 depending on your ability. And there are many other benefits such as first class training, free personal PPF insurance, a pension scheme, expenses and relocation assistance if necessary.

So phone Derek Pearson on Staines (0784) 63811 during business hours or on Bromley (0889) 50709 evenings and weekends. Alternatively, if you prefer, write to him at Cord Designs Limited, Cord House, The Causeway, Staines, Middlesex TW18 3AX.



# SYSTEMS SUPPORT

**Bristol Office**  
Pre and post sales  
**£9,000 - £14,000 + car**

Can you support a sales success story like ours in Bristol?

We are being particularly successful with the sales of our wide range of products to the end user market, notably in CAE, office automation and networking systems.

This success demands a major increase in our systems engineering support. This is where you come in.

If you are aged 25+, have at least 2 years' systems software support experience, either with a user or a computer systems manufacturer, thrive in a competitive market environment; yet find that your present company lacks a certain cutting edge, then we need you now, particularly if you have specialist experience in:

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- \* Computer Aided Engineering
- \* Networking
- \* Data Bases

The new MV/10,000 is the most powerful computer in Data General's Eclipse family. It is the fastest and best price/performance virtual memory 32-bit computer on the market.

We want people to match our product growth and market penetration in these areas.

Initial training includes product familiarisation in the United States.

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Send your c.v. or write or telephone for an application form to: Glyn Richards, Personnel Officer, Data General Limited, Hounslow House, 724-734 London Road, Hounslow, Middlesex TW13 1PD. Tel: 01-572 7455.

# RANK XEROX

Bushey, Hertfordshire

IBM 4331 OS/VS1 CICS COBOL

**Systems Programmer to £14,500**

The above machine will shortly be installed at Rank Xerox, Bushey. It will be used for the development and support of systems for use in Rank Xerox Operating Companies in several countries.

An experienced person, ideally with OS/VS1/CICS and a good working knowledge of IBM telecommunication protocols, is required as the sole systems programmer for this machine.

He or she will have additional responsibilities, such as support to application development groups and the use of microcomputers linked to mainframes. Infrequent overseas travel may be required.

**Analyst/Programmers £11 - 13,000**

Several major systems are being developed and supported by expanding project groups at Rank Xerox, Bushey.

These systems, embracing service, administration, financial and marketing applications are in use in several Rank Xerox Operating Companies around the world.

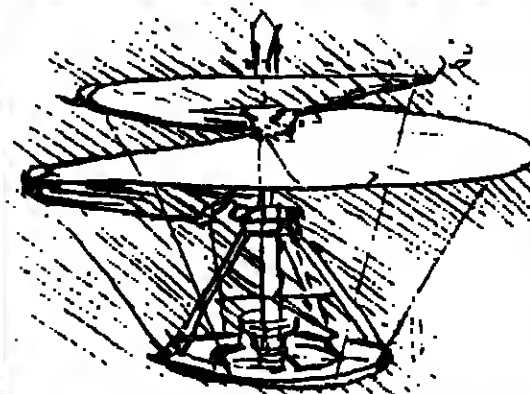
We are looking for people who have 3 years solid COBOL and who are seeking an opportunity to develop their knowledge of CICS on-line processing techniques. These positions will suit mature and ambitious individuals who will enjoy variety and challenge with occasional overseas travel.

The work environment is extremely modern and comfortable, and the above positions carry excellent fringe benefits including BUPA. Generous relocation assistance to this pleasant location in the green-belt of Hertfordshire will be provided where appropriate.

For full information and an interview, telephone Digby Dyke: 0905 611512 office hours, or 06845 2210 evenings and weekends or write to him with details of your career to the address below.

Computer Personnel & Executive Development Associates Limited  
11 Gillingham Street, London, SW1V 1HN.

# If Leonardo da Vinci had shown his ideas to CASE...



Leonardo kept his drawings of flying machines secret, knowing they wouldn't be understood. If he had been able to show them to CASE, we wouldn't have had to wait until 1939 for the first successful helicopter flight.

Our technological understanding and commitment to an adventurous programme of Data Communications research and development, has already meant that we're producing ideas ahead of our time. More daring than most companies, we allocate large capital budgets to new development projects and, we provide our Development Staff with all the resources they need to develop original, inventive, even revolutionary ideas.

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Is this the sort of environment you've been looking for?

We're now seeking Systems Designers, Systems Engineers and Programmers, Real Time Programmers, Signal Processing Engineers, PCB Designers and Mechanical Designers, to join our Communications Product Development teams at various levels in the following specialisations:

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- Statistical Multiplexing
- Networks, Wide and Local
- Communications Processors
- Network Management Systems
- Real Time, Multi-Tasking Software
- Message Switching/Mail Systems
- Digital Signal Processing - Modems
- Communications Protocols X25, PAD, X121

The starting salaries offered will be up to £18,000 p.a. depending on the extent and relevance of your experience and qualifications, plus relocation assistance where appropriate.

Call Chris Burns on Watford (0923) 33500 or write, with full details, to him at: Computer and Systems Engineering PLC, Caxton Way, Watford Business Park, Watford, Herts. WD1 8XH.

# CASE

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a Generation ahead

## key people

### RECRUITMENT

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To work under own initiative, taking responsibility for the design and development of new products. Applicants should have a degree in electronics or a physical science, with at least 2 yrs exp. in microprocessor electronics, including analogue interfacing.

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A graduate with a min of 3 yrs exp. as a software engineer, with a good knowledge of language design/programming. Assembly programming exp. and knowledge of at least one high level language req'd.

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**ENGINEER** to £8,000  
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**SPECIALIST** to £7,000  
An opportunity exists in this expanding area to ensure a specialist position. Activities include Computer Peripherals & Processing areas. Technical knowledge of Printers, Terminals and Data Comm req'd.

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To organise and run a small team of repair centre. Must have exp. in computer & digital electronics to work under min. supervision. Car's made activities are in Computer Peripherals equipment.

Will interested applicants please send a CV or telephone for further information on Burnham (09286) 3311 and ask for Jane Young, 198 High St, Burnham, Bucks. SL1 7JD

## 1984 OPPORTUNITIES

**WEST MIDDLESEX/BERKS BORDERS** £12,000  
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An extensive program of RPGII and RPGIII projects are currently scheduled with our client a well-known commercial organisation. They seek to recruit programmers to perform both programming and analysis (including closely with the User area). Applicants should offer at least eighteen months programming in either language and RPGII candidate will be offered RPGIII training. Ref: A1

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COBOL, CICS, DL1 projects are currently being developed by our client located in a very pleasant part of Berkshire. They are seeking Systems Analysts with around two years' experience of Analysis ideally together with a programming background, and programmers with at least two years COBOL for whom CICS and DL1 training will be available, and project work will cover a wide range of commercial/financial systems. Ref: A2

**CITY** TO £10,000 + BENEFITS  
**RPGII/III - BANKING**

International Banking systems provide constant challenge and interest in terms of computer systems development and our client is no exception. With systems already using RPGII on System 34 they are planning for the development of SYSTEM 38 RPGIII systems. If you can offer your career towards system design and analysis, Ref: A3

**NORTH KENT** £7,000-£13,000  
**ICL COBOL ANALYST/PROGRAMMERS/PROGRAMMERS**

A leading Consumer Products Manufacturer is now embarking upon a range of new commercial developments in COBOL on ICL 2800 VME systems using on-line and database software. They now wish to recruit programmers with at least two years ICL COBOL to be fully involved in these challenging developments, where there will be appointments to work with Users. Ref: A4

01-434 2042

**dp SELECTION SERVICES**  
A Division of L. D. Hughes & Co. Ltd  
7 Swallow Street, London W1R 7HD  
"We look forward to hearing from you."

To apply for these positions either write or telephone DP Selection Services quoting the appropriate reference.

# Sales Executive

IBM Application Software

*'Real achievement has always depended on one thing - the successful management of human resources'*

Our Client, a major UK and International Software Company, has recognised this since the early 60's and embarked upon a deliberate policy of developing computer based management tools to meet essential requirements of organisations dealing with human resources. Their specialised software products are unequalled in their performance and ability to meet each customer's precise requirements, and have been designed to provide a complete human resources management package.

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**Cathy Tracey & Associates Ltd**

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ALDERLEY ROAD  
WILMSLOW, CHESHIRE SK9 1NX  
TEL: 0625 530804 TELEX: 825264

**CTA**  
RECRUITMENT CONSULTANTS

For an immediate confidential interview where you will be supplied with full company information, contact Richard Champion on 021 236 1999 (24 hour answering service) or 0562 884166 (evenings & weekends).

attracts the best!

## PL/1 PROGRAMMERS

to £12,000

**C. LONDON**  
Are YOU looking for a challenging position that can offer you real career prospects? Major expansion of this progressive company, based in Central London, has led to vacancies for Programmers with a minimum of ONE YEAR'S experience. Our client retains large IBM MAINFRAMES using PL/1, CICS and DL/1, and has recently embarked on a large SYSTEMS DEVELOPMENT programme. Company offers:

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- \* NEW DEVELOPMENT PROJECTS
- \* THREE SALARY REVIEWS A YEAR
- \* EXCELLENT PROMOTION PROSPECTS
- \* FLEXTIME
- \* SUPER BENEFITS PACKAGE
- \* EMPHASIS ON CAREER AND TRAINING

If you are interested please phone Sue Evans for further details.

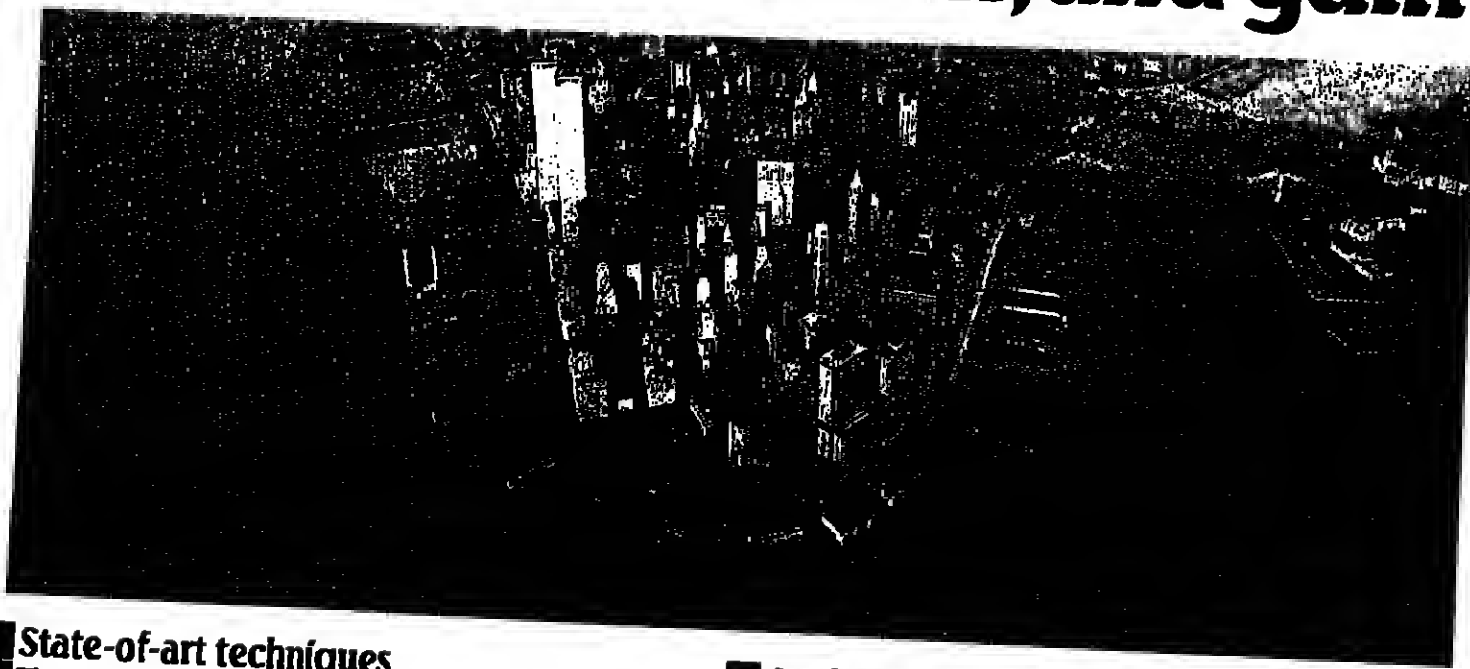
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# Join this ambitious comms project in Manhattan, and gain-



- State-of-art techniques
- Top-scale salaries
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- Exclusively development work
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- Analyst Programmers
- Network Consultants
- Systems Architects
- \$30,000 to \$65,000 (see scales below)
- equates to £21,000 to £46,500 p.a.

## Analyst Programmers

- Mandatory skills:
- 3-5 years experience
- OS/MVS
- On-line systems
- Assembler

\$35,750 to \$41,500 p.a.

Also, for some positions, one or more of:  
CICS, TCM, SDLC, BSYNC, ACF/NCP, 3705.

Ideal applicants will have experience of a large installation, strongly developed analytical skills, and good powers of communication. Experience of a disciplined approach to standards and project planning is important - our Client uses 'Project Life Cycle' methodology. The work comprises the development of a new communications system using state-of-the-art technology.

## Communications Analysts & Consultants

- Mandatory skills:
- Voice and/or data networking
- Optimiser techniques
- Analysis skills
- Good communicator
- Systems Architects

\$39,000 to \$47,500 p.a.

Also, for some positions, one or more of:  
Network design, network project co-ordination, analysis and design of comms systems.

- Mandatory skills:
- 8+ years experience
- Voice and data network technology
- Multiple project scheduling & control
- Independent research experience
- Good analytical skills

\$52,000 to \$65,000 p.a.

For most senior positions:  
12+ years experience  
Appreciation of state-of-the-art voice & data hardware & software  
Technical management experience

Systems Architects and Communications Analysts and Consultants are required to work on the project in our Client's large network engineering division - a dynamic, high-technology environment. All applicants must be able to demonstrate a strong networking background to qualify for these medium- to senior-level positions.

## The Project

Our Client is the world's largest brokerage company, based in the financial quarter of Manhattan. They are developing an ambitious, advanced networked communications system for their worldwide operations, capitalising on the latest developments in technology, including satellites, fibre-optics and voice and data transmission.

With an initial assignment period of 12 months, all these positions carry the potential for promotion and for long-term career development within our Client's organisation.

## Our Package

Our New York office is located very close to our Client's site, providing on-the-spot support and assistance to all personnel assigned to the project. We have over six years' experience of resourcing projects in New York, and understand how to help new arrivals settle in with minimum disruption. Our relocation package provides full family affairs, relocation allowance, medical insurance, sick pay; it also arranges accommodation, banking facilities car transport (if appropriate) and practical assistance in settling in.

## Action

These are superb opportunities for suitably qualified people to work on the latest telecommunications systems and to enjoy the experience of the American way of life. Screening interviews are currently being scheduled in London, Birmingham and Manchester, and our Client will conduct selection interviews in London from 11th February, 1984. Please Mary Coleman today on 01-836 8411, or send your C.V. to her at Computer People International, VLI House, 68-69 St Martin's Lane, London WC2N 4JS. Alternatively, mail the coupon.

TO: FREEPOST, VLI HOUSE, ST MARTIN'S LANE, LONDON WC2N 4JR

Name: ..... Address: ..... Tel (work): ..... Tel (home): .....

**VLI Computer People International**

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021-443 8381 Computer People Midlands, Alpha House, Birmingham B1 1TY 061-491 1646 Computer People North, Sovereign House, Stockport Road, Cheshire SK9 2EA 01-836 8411 Computer People International, VLI House, 68-69 St Martin's Lane, London WC2N 4JS  
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## Systems Programmers

British Aerospace Aircraft Group has vacancies for experienced Systems Programmers to work on the development and maintenance of MVS and associated systems software for the 12 Mb. IBM. 3032 at our Filton site. One of these vacancies is a senior appointment for a team leader.

We would like to hear from you if you have at least two years' experience in some or all of the following:-

Systems Generation · System Maintenance (SMP)  
JES 2 · TSO · Assembler · VTAM · HSM  
Programme Product Implementation

We provide an extensive TSO network, centred on Filton, for the whole of the Weybridge-Bristol Division, with links to installations at Weybridge and other sites.

Conditions of employment include a first-class contributory pension scheme, free sick pay and life insurance and excellent welfare, social and sports facilities.

Please telephone or write for an application form to:-

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Filton House, Bristol BS99 7AR.  
Tel: Bristol 693831  
Ext. 140.

**BRITISH AEROSPACE**  
AIRCRAFT GROUP  
Bristol

## Real Time Communications

S-COM is an expanding software and systems house specialising in true Real-Time applications. Our client list is extensive and includes many major international companies.

A number of vacancies have arisen for both Freelance and Permanent staff including a project for one of our major clients, based on the South Coast, to design and develop a new communications product. Suitable applicants should possess a degree or similar qualifications. A good knowledge of Assembler and at least one high level block structured language together with relevant experience in any of the following communications environments:-

- Telephony, Message Switching
- Operating Systems, Telex
- Packet Switching
- General Automation Minis

Where a project is remote from Aylesbury, subsistence payments are often payable in addition to salary or fees.

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Senior Software Designers	To £16K p.a.	£525 p.w.
7-8 years relevant experience		
Senior Programmers/Designers	To £11.5K p.a.	£470 p.w.
4-5 years relevant experience		

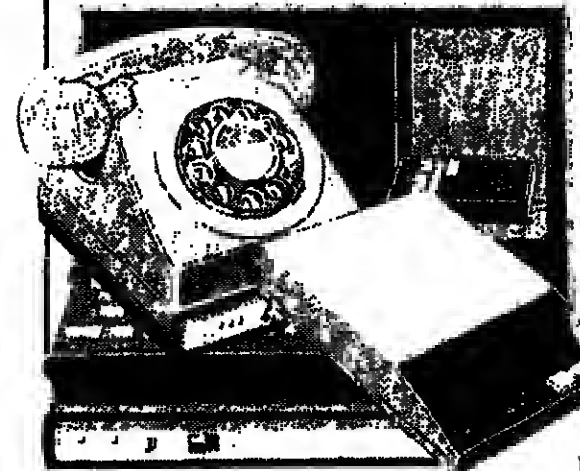
For further details contact Lawrence Mills or write enclosing a full CV.

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Tower House, High Street, Aylesbury, Bucks. Tel: 0296 32023  
Evenings after 7pm or weekends: 0296 33059

URGENT Due to illness we have an immediate requirement for a VAX FORTRAN Software Engineer.

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Many organisations claim to be at the forefront of modern technology, but few can match the advanced range of sophisticated communications products marketed by our client. As a young, but already well established and respected company, with a product range including modems, personal computers, simulata software packages and communications networks, they are poised to make further impacts into the marketplace. Additional sales and support specialists are now needed to maintain the already considerable momentum.

## Hardware Support Specialists (2)

London based £10,000

Essentially office based, you'll have the technical knowledge sufficient to answer queries from both Dealers and End Users in one of four areas: LPM based micro hardware or GPM micro software at a small business systems level; data communications software. Additionally, you would be expected to help provide a technical training to Dealers and their sales staff.

## Regional Sales Executives (2)

North of England

& Midlands/West based

£13,000 + Bonus + Car

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For further details and early interview call Noel Price on 01-278 6126, or 01-286 9111 (9pm-11pm) or write to him with full CV to: ACSIS Inc., 37-40 Bowling Green Lane, London, EC2R 0BQ.



## MVS SPECIALISTS for

## SYSTEMS SOFTWARE DEVELOPMENT & SUPPORT to £20K + car

MACRO 4 has been originating and marketing systems software to DOS/VS users with great success since 1968. We have our own 4341 dedicated to development and support of our products, which are marketed worldwide.

We are now entering the MVS market and require several experienced MVS Software Specialists to work initially on conversion and/or support of existing products, and subsequently on new products.

Prerequisites are a thorough knowledge of MVS structure (internal knowledge would be an advantage), ability to write Assembler and a high level of self motivation.

In return we offer an excellent salary, non-contributory pension scheme, free BUPA membership plus the normal range of benefits associated with a successful company.

Write or phone Phil Heseltine or Terry Kelly at

Macro 4 Ltd, River House, Reeston Way, Wellington, Surrey. Tel: 01-869 0011

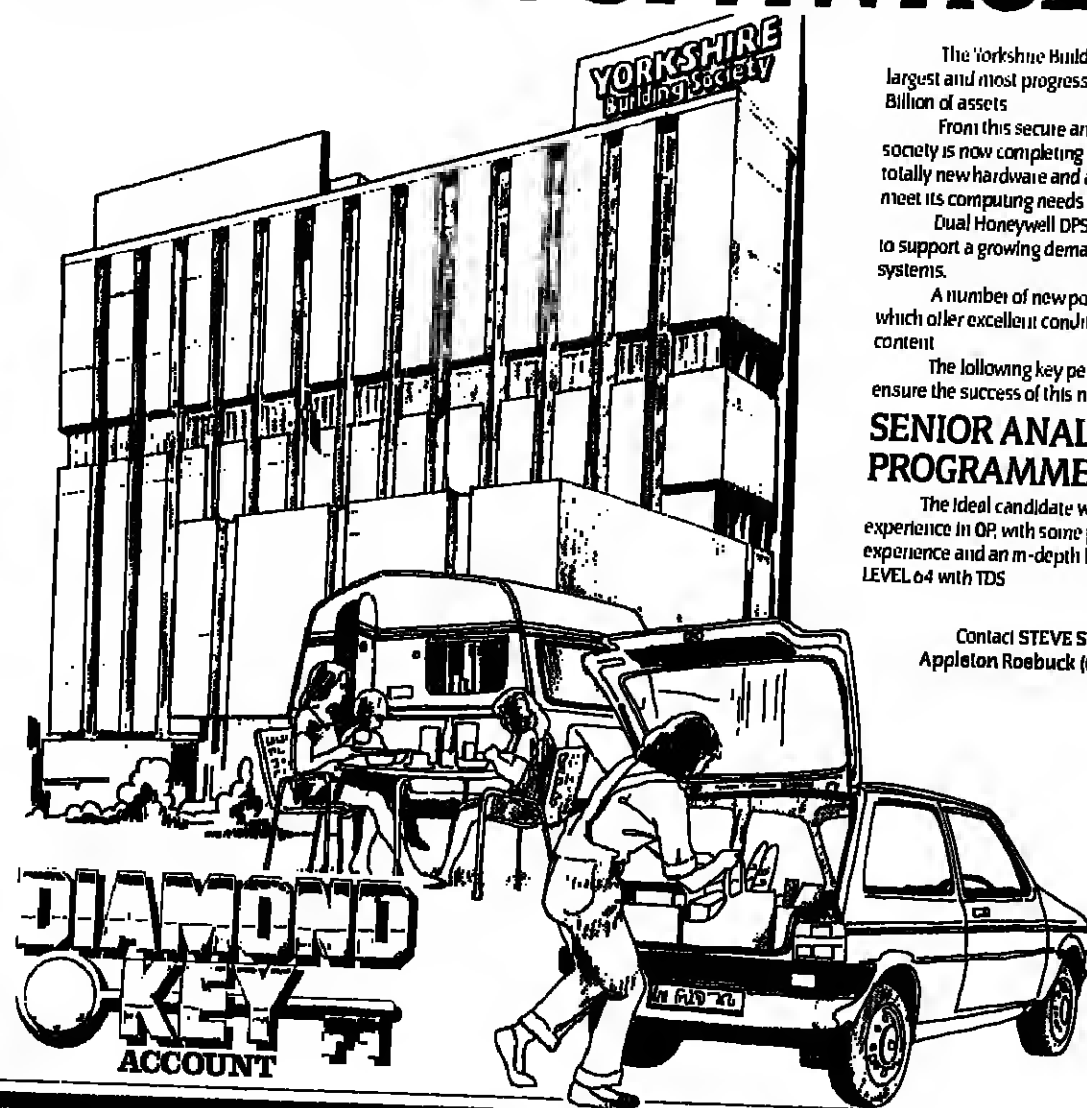


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# GET THE KEY TO YOUR FUTURE AND OPEN UP A WHOLE NEW LIFESTYLE.



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From this secure and well established base the society is now completing its plans for the introduction of totally new hardware and application systems designed to meet its computing needs into the 1990s.

Dual Honeywell DPS7 mainframes will be installed to support a growing demand for on-line and real-time systems.

A number of new positions have been generated which offer excellent conditions, progression and technical content.

The following key personnel are now required to ensure the success of this new venture.

## SENIOR ANALYST/ PROGRAMMER c£11,000

The ideal candidate will have at least 4-5 years experience in OR with some previous supervisory experience and an in-depth knowledge of COBOL, DPS7 or LEVEL 64 with TDS.

Contact STEVE SYKES or JOHN MASON on Leeds (0532) 455911 during office hours or STEVE SYKES via Appleton Roebuck (090484) 350 evenings and weekends, or write to the address below with brief career details.

## ANALYST/PROGRAMMER c£8,500

We are seeking 2 bright Analysts/Programmers with a minimum of 2-3 years experience in OR and in-depth knowledge of COBOL, preferably on DPS7 or LEVEL 64 with TDS. Candidates with experience in a similar environment will also be considered for these posts.

This is a rare opportunity for top calibre people to join a large, successful and expanding organisation at the outset of this major development. The jobs are stimulating and challenging as you will be working with "State of the Art" hardware and software and there are ample opportunities for progression as the department grows.

Head Office is located in the centre of Bradford, within easy reach of the Yorkshire Dales and attractive and reasonably priced housing areas.

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We are urgently seeking enthusiastic and user-oriented professionals within the following categories:

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with micro programming and/or design experience, awareness of the business software market and ability to implement both packaged and bespoke applications software.

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Good degree computer involvement biased to business applications. Ongoing personality, able to deal confidently and sympathetically with PC users at all levels.

Remember, the IBM PC and derivatives have behind them the huge development resources of IBM itself. IBM micro systems are here to stay, prospects are superb and NOW is the time to secure your future.

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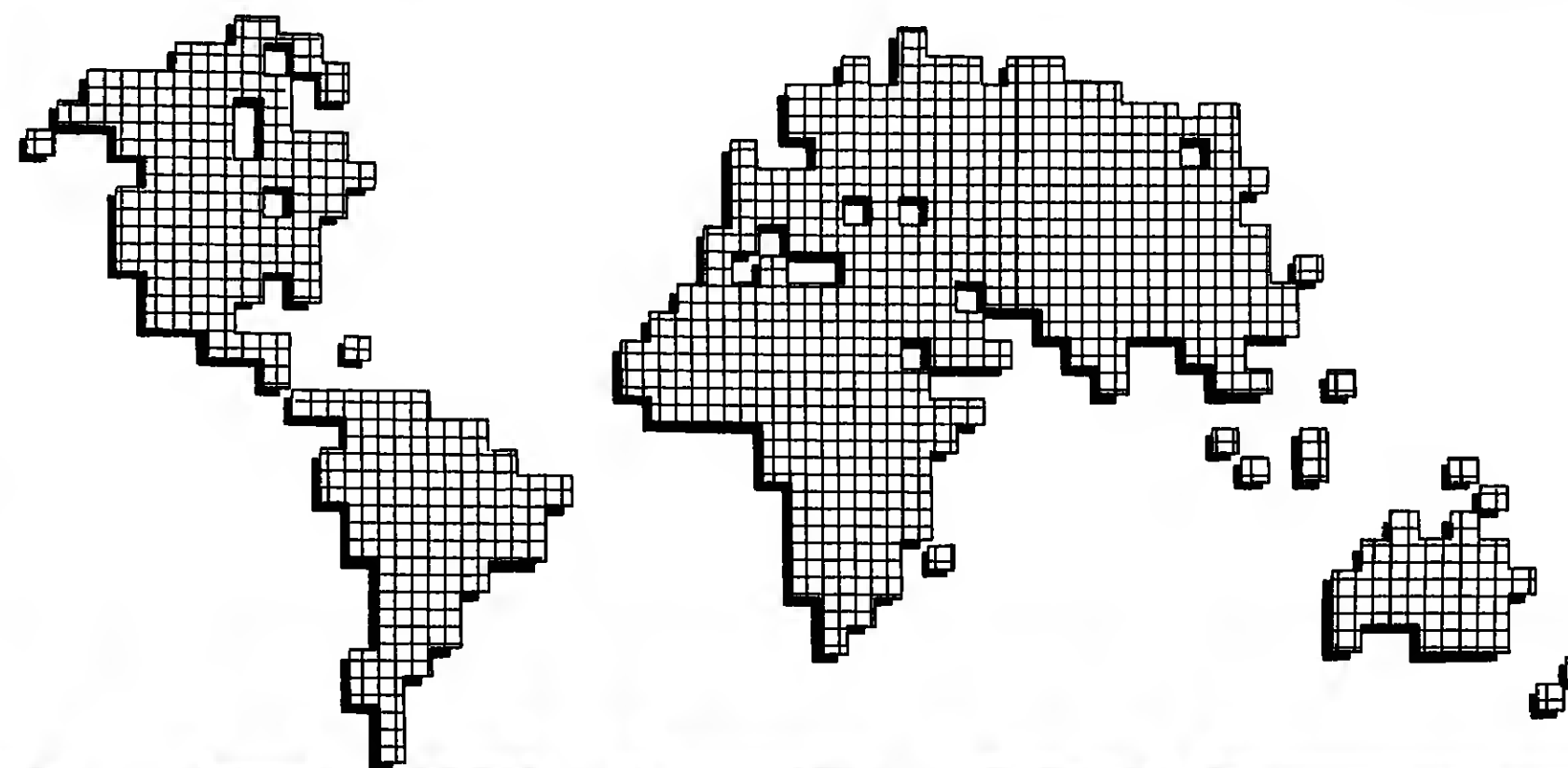
Just prove to us that you can really sell computer systems and have the ambition, commitment and energy to take you to the top.

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(7254)

**Lloyd Chapman  
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During 1983 we expanded not only in the U.K. but in the U.S.A. and the Middle East and offer a professional and personal recruitment consultancy service based on years of experience in the industry we have grown up with.

History has proved that "today's applicants are tomorrow's clients".

The brief details, on the centre fold, of jobs available in the U.K., Europe, U.S.A. and the Middle East indicate the breadth and scope of our activities. They represent only a selected extract from our current requirements file.

Should you wish to be considered for any of these or similar positions, or be interested in making a general enquiry please make use of the freepost application form provided on the back, or telephone any of us for further information.

Alternatively if you are a client please do not hesitate to contact any one of us to discuss your requirements.

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Job 11111111

(7281)



- (11) **UNIX and "C"**  
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Systems Software INTERNALS - Oxford  
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Industrial Automation New Project - Central London  
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Development and implementation of Packet Switching Networking system for Airline utilization. Designers and programmers with Assembler backgrounds and knowledge of Protocols, Message Handling and Distribution required. Permanent positions.  
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Design and Development Engineers with Degrees. For Avionics Manufacturing company. Permanent or minimum 2 years contracts.  
**TELECOMMUNICATIONS DEVELOPMENT DIRECTOR - EAST COAST**  
To build and steer the future activities of a well established communication group.

- (24) **OPERATING SYSTEM - I/O DRIVER SPECIALIST**  
Midlands and South - £10-£14k  
To work on Design and Implementation of Systems for New Hardware Configurations. Particularly 16 Bit Micro driver Special Systems.

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- (26) **INFORMATION SYSTEMS**  
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**CONSULTANT MANAGERS/IMPLEMENTATION ASSURANCE EXPERTS**  
To work on very large Distributed Data Systems from feasibility through Specification to implementation and Client Integration.

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For the Design of Data Base Packages and Special Systems, and the Design of Users Systems, including implementation and Data Base Management.  
Experienced ANALYSTS and PROGRAMMERS also required.

- (22) **SCIENTIFIC/TECHNICAL PROGRAMMERS/DESIGNERS**  
£7K-£14K  
MIDLANDS - HOME COUNTIES - SOUTH  
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- (28) **FINANCIAL SYSTEMS**  
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- (14) **PROJECT MANAGEMENT SUPPLY CONSULTANT**  
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To provide Support and Control for Large Multi-Project Projects  
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Responsible for all Accounts, within a Technical Department; through all phases of development, to Sales and Marketing and to have total Q.A. and on-line responsibilities.

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HP 3000 Designer - London, Manchester  
Programmers - Aberdeen  
TANDEM TAL - London, Sheffield and  
PROGRAMMERS - Counties  
PDP11 and VAX - London/Surrey  
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**IBM SYSTEM SOFTWARE PRODUCTS**  
IBM background essential London, Home Counties and West County  
**BANKING & FINANCIAL SYSTEMS**  
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**FINANCIAL SYSTEMS AREA**  
Hardware Sales and Systems Support - based  
**HARDWARE SALES**  
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Various of Commercial Installations

- (9) **U.K.**  
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For development work

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Designers and Programmers with Language Design, Optimisation and Implementation experience particularly related to 16 Bit Systems using Firmware Modules.

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Systems Analyst - preferable Arabic speaking  
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Office 1110



**DALROT**

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Our client Arabian Data Systems is running a multi CPU configuration comprising 30x's 4309's with various minis and micros. Expansion of their activities has prompted the need to fill the following positions

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CONSULTANT/PROJECT LEADER  
SALARY £25,000-£35,000**

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**225,000**

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*Worldwide*  
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£14,000-£17  
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**Abu Dhabi**

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**Plus benefits**

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**Please tick the jobs  
in which you are interested**

- in which you are interested**
- |                         |                      |
|-------------------------|----------------------|
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| 2. SAUDI U.A.E. HP3000  | 17. IND. AUTOMATIDN  |
| 3. OMAN U.A.E. WANG     | 18. MD SYSTEMS       |
| 4. SAUDI PRIME          | 19. HDLLAND          |
| 5. M.E. MVS             | 20. GERMANY/ITALY    |
| 6. M.E. DOS/VSE         | 21. GRADUATES        |
| 7. SAUDI DEC            | 22. SC/TC DESIGN     |
| 8. U.K. ICL 2800        | 23. COMPLERS         |
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| 15. LONDON MANAGER      |                      |

1000

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- ASSEMBLER
- MILITARY
- SCIENTIFIC
- TECHNICAL
- MINI
- PASCAL
- ALGOL
- RTLII
- MATHS
- GRAPHIC
- EXPERT

A background incorporating any of the following is advantageous: Software Engineer, Programmer, Analyst/Programmer, Designer, Project Leader. Candidates on 4-8 week's notice acceptable.

Top rates will apply to applicants with all the necessary skills and experience.

**For further information why not ring us at  
Computer People Midlands, Computer People  
London or Computer People South?**

**VI Computer People**

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## The Market Leaders

7334

## A CHALLENGE FOR THE FUTURE

# Analyst/ Programmer

The new **File Ethylene Plant** in **File, Scotland**, is scheduled for start up in 1985. The Plant is in an attractive area, close to the town of **Edinburgh**. Designed to convert North Sea Gas to ethylene efficiently, this plant represents an investment of over £400 million and it will rely heavily on up to date computer systems.

As part of the planned build up of staff we are seeking a graduate with up to 5 years computing experience to join our **Information Systems Department**. This is responsible for establishing a complete range of computing facilities to the plant from manufacturing information through process maintenance to financial and electronic office systems.

Initial role will be in the manufacturing information area with later opportunities to move to other parts of the company as the career progresses. Early responsibility will be given to work closely with users to meet their computing requirements.

The department uses primarily an **IBM 4341** and a **Dale General MV8000** computer. The IBM system is based on a powerful relational data base management language. Other systems are available through the company's mainframe. Training should be in the mid twenties.

Candidate relative to previous experience will be provided. It would be an advantage for candidates to have a chemical engineering or computing background, but opportunities are by no means restricted to individuals with this experience.

## Systems Programmer

We are also seeking a systems programmer to take responsibility for the operating system on the IBM 4341 and its relational data base management system. Primary responsibilities will include the start up of this system and the provision of consulting services to the company's plant at Fawley, Southampton, and two other sites in Europe. In addition the successful applicant will take some responsibilities for the Data General System and for commissioning and maintaining interfaces in a multi vendor environment. Candidates should be in their mid twenties, ideally graduates with experience in a systems programming role of IBM V operating system in a database applications environment. However, consideration will be given to those candidates who have experience working with other operating systems.

Candidates can expect a competitive salary and benefits package which includes a relocation allowance where applicable.

Interested parties, male or female, should telephone 0592 262828 or write for an application form and job description to:

**P W Allnutt**  
**Recruitment Co-ordinator**  
**Esso Chemical Ltd**  
**Cerilye House, Carlyle Road, Kirkcaldy, Fife**



1941. 10. 15

## Operators/ Senior Operators

**Bournemouth**  
**£6,500 - £9,000 Plus Benefits**

**Remuneration inclusive of Shift Allowance**  
Benefits include relocation package and mortgage subsidy (where applicable), non-contributory pension, free life assurance, subsidised restaurant, sports and social club and staff discount shop.

## Requirements

Abbey Life has vacancies for Operators and Senior Operators with a minimum of 1 years experience of MVS/JES2 (VS1 would be considered). Knowledge of JCL and utilities would be an advantage but not essential. 5 'O' levels (including English and Maths) are also required. The Company operates a 5 day, three shift system, currently under MVS/SP on twin IBM 3083 CPUs with ACF/VTAM, CICS/VS and ROSCOE.

**Please write or telephone for an application form to:**

**Val Hastrop or Alison Davies,  
S. & D.P. Technical Recruitment,  
Abbey Life Assurance Company Ltd.,  
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- \* Only one salesman has left this company in the last 10 years.
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- \* Every transaction is different.
- \* Their salesmen are involved in more deals in a month than a mid/men/men salesman normally handles in a year.
- \* There is perpetual involvement in the most exciting aspect of selling.
- \* This product area automatically increases personal market value and business management skills.
- \* The company is dedicated to individual freedom of expression, flexibility of operation and excellence of performance.

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and will be best suited to those sales people who feel comfortable handling sales transactions of around £½ million; successful negotiators with a truly competitive nature and real flair for creative thinking. It will be a particularly attractive opportunity for those in sales management who would prefer to be doing deals instead of 'pretting around' with staff!

Expected earnings, other than sickness insurance and health assurance, include profit-sharing and a high basic salary, with a total remuneration of

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LSI Logic, a leader in the field of custom designed integrated circuit, requires an experienced Data Communications Technician to support its new European facility based in Bracknell town centre.

The successful candidate must have two to three years' experience of Data Communications and demonstrate a basic knowledge of:

- Digital and analog network operations
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Primary responsibilities consist of monitoring the Regional Communications Manager with maintenance and installation of local and international networks.

We offer a competitive salary and an outstanding benefits package. Some travel may be required. Career prospects are excellent.

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The initial task will be to build a team of up to 10 people, probably at the Leatherhead Remploy factory with the intention of expanding the operation to other strategically located sites.

The job includes recruitment, training and motivating disabled staff and establishing standards, job costing and accounting routines. Selling of the service will, initially, be carried out by the existing Remploy staff.

Some knowledge of CP/M, MS/DOS and communications between micro is desirable.

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**Remploy**

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**IBM SYSTEM 38/SENIOR CITY**  
To £14,000  
This could be a project leader or analyst position. The role is to develop and maintain the IBM System 38/40 environment. The successful candidate will have a minimum of 5 years' experience in this field. The company offers a competitive salary and benefits package. REF: C/W 4060

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A mature, multi-task, and a sound business awareness are needed. This is a new venture in an established firm, and you will have plenty of opportunity for both development in a CICS environment and customer support. REF: C/W 4079

**PROGS UP TO TEAM LEADER CITY**  
£8-12,000  
Ideally situated for Liverpool Street/Fenchurch Street Stations. This large financial organisation seeks IBM programmers at all levels. IBM COBOL is the minimum requirement, and any on-line or database experience would be useful. Excellent promotion prospects. Team leaders must have the ability to motivate and control staff. Home and lunch allowance. REF: C/W 4076

**YOUR DIBOL SKILLS ARE WANTED!!!**  
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The last time you heard of DIBOL (VAX) she is seeking DIBOL experience at all levels. They are seeking commercial systems of a very high standard and much development work is planned for the future. You will be involved in analysis and design. Management prospects are available for the right candidate. Database exp. is also an asset. REF: A/W 4035

These positions are just a brief selection from our extensive database of jobs in London and the South-East. If you cannot see a position advertised for your particular skills, or are considering re-training or a change of hardware, a quick phone call will put you in touch with a consultant specialising in your field. 70% of jobs in this industry are never advertised. Why not let us tell you about some of them? We look forward to hearing from you.

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If you can offer a minimum of 12 months' experience in COBOL exp., my client based in Kent would be interested in hearing about you. They have recently undertaken the development of a major commercial project, which will involve the use of analysis, user liaison and programming. IMAGE, QUERY, VIEW, VPI, US, and RAPIO are desirable assets although training is available. A good salary is offered together with B.U.P.A., free life assurance and relocation assistance. REF: A/W 4085

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A genuine opportunity has arisen to become part of an exciting and challenging development in 1984 within this prosperous and well established bureau. Situated in rural Berkshire, they have requirements on 2 levels. Programmers with a minimum of 2 years' exp. on mini machines using BASIC as a language. A great deal of client liaison will be involved. Excellent career development prospects. For the consultant roles they require mature applicants with good financial backgrounds, technical knowledge is not essential but you will have the ability to deal with clients on all levels. Excellent benefits including profit share. REF: A/W 4086

**WANG VS CITY**  
£10-13,000  
Make 1984 the year to develop your computer skills to the full. Excellent career openings offered with this major insurance broker, part of an international group. They have current vacancies for an analyst/programmer with systems development experience using Wang and also a COBOL programmer with a minimum of 16 months' working with interactive systems. Insurance background would be a plus but not essential. Working conditions and company benefits are excellent. REF: A/W 4073

**DATA GENERAL COBOL**  
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This multi-national oil exploration organisation currently invite applications from systems programmers with a sound knowledge of D.G. equipment. Familiarity with A.O.S. operating system and INFOS is essential. In return they offer an interesting and stable working environment plus a good salary, regular reviews and career path. REF: A/W 3071

**ANALYST/PROGRAMMER LONDON**  
TO £12,000  
If you promised yourself a more interesting career for 1984, why not consider a move to this progressive and go-ahead company. As a member of this dynamic development team, you will be working on a number of new financial development packages. All I require is 2 years' COBOL programming preferably in a financial environment with proven background. The company offer a substantial package to the right applicant. REF: E/W 4099

**HONEYWELL COBOL KENT**  
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My client is a leading insurance company, and due to major expansion plans are looking to recruit additional members of staff at "ALL LEVELS". The essential requirements are for 16 months' + HONEYWELL COBOL and/or Screenwise experience. This is a superb opportunity to move into an extremely interesting position, which will involve substantial development work, and excellent promotion prospects. Package includes subsidised mortgage. REF: E/W 4098

**JUNIOR ICL ME28 COBOL BERKS/SURREY**  
TO £7,000  
A national consumer company with hundreds of retail outlets have a challenge, for an ambitious and competent programmer wishing to progress in 1984. If you have in excess of 1 year's COBOL, and exposure to either financial and/or marketing systems on an ICL ME28 with on-line and batch experience, this could be the move you are looking for. REF: E/W 4097

**IBM COBOL**  
TO £12,000  
Hertfordshire based company urgently require a programmer with 1 year's IBM COBOL and RAMS experience. The ideal candidate will be looking to take on a responsible role and get involved with a major financial system. The company have an IBM 4331 running under DOS/VSE. On-line experience would be an advantage. The company offers excellent opportunities within a growth environment, and a full range of benefits. REF: G/W 6786

**CICS OR DL/1? CENTRAL LONDON**  
TO £12,000  
Rewriting contract opportunities for programmers and analysts/programmers with 12 months' + IBM COBOL experience. Ideally you would have experience with either CICS or DL/1. The company retain an IBM 4341 under DOS/VSE but are shortly going to MVS. This is a prestigious organisation offering extensive training facilities and excellent promotion prospects. REF: G/W 2970

**IBM SYSTEM 36 LONDON**  
TO £13,000  
This multi-national organisation with offices worldwide, are seeking an analyst/programmer with a minimum of 18 months' RPL/II experience gained on IBM equipment. You will be involved with a major project which is being decentralised from various offices abroad, therefore occasional European travel may be required. Interested? Then please ring me in the first instance! REF: G/W 1391

**DEC/POP BASIC + NEW SITE**  
£9,000  
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Successful applicants will initially assist in the development of this strategy and then participate in detail system design and implementation. To meet the demanding standards required you will need 7 to 10 years experience in Project Management and have worked with both mainframes and minis. You will also require good communication skills and the ability to work at all levels of management. Experience in the oil industry is obviously essential.

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# Job Spot

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**ANALYST/PROGRAMMERS**

to £14,000

SPI International is one of Europe's leading systems and software houses. Our Information Systems Division is currently seeking Programmers and Analysts to join them in the design, development and system testing of several sophisticated applications. These systems are developed to the highest professional standards, using advanced implementation techniques. The projects are based in London, however opportunities also exist for overseas assignments.

Applications are invited from Programmers and Analysts with sound knowledge and experience of Cobol, preferably in a banking or financial environment. Successful candidates will receive an excellent salary which will reflect both your own experience and the importance of these projects.

LOCATION: LONDON

JAS89/1



TRAINING

2 attractive

Our client is a progressive training and applications software house. Their specialised areas of experience lie in the fields of financial planning, word processing and database management. They are seeking a broad range of microcomputers. Increasing demand for the company's products and services has created a requirement for a Trainer who will be responsible for designing and implementing customer training courses. Specific areas of interest will be a knowledge of financial management planning systems (ideally Multiplex, Visicalc and SuperCalc) and word processing systems. The ability to write technical manuals will be necessary and experience of IBM PCs, CP/M and Basic would be a definite advantage. Our client will offer an attractive salary and opportunities for career development as the company grows.

LOCATION: MIDDLESEX

JAS89/2

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**NORTH WEST**  
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IDMS 6 months - start immed  
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Skills \_\_\_\_\_  
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PSION

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Candidates should have three years' RSTS experience in a BASIC PLUS programming environment. Knowledge of CP/M based systems would be an added advantage.

Conditions include:  
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Our client is a highly successful manufacturing company located in one of the most attractive areas of the East Midlands, offering low cost housing and excellent amenities.

The company has successfully implemented modules of a sophisticated Manufacturing Resource Planning System, and is now embarking on the next major phase.

This is a key appointment, offering considerable scope for a creative analyst to make a measurable contribution to the company's profitability.

The successful candidate will have at least five years' data processing experience and will have successfully implemented at least one major project using an M.R.P. system. Knowledge of TOTAL database would be an additional advantage.

For further details, please contact Barry Turton on (0270) 627206 weekdays, or Alsager (09363) 4743 during evenings and weekends, or write to him at the address below.



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## Management Consultancy

Consultants £19,000-£25,000

Analysts and Programmers £10,000-£18,000

Our client is one of the world's leading Management Consultancies which specialise in Government, Industrial, Commercial and Financial sectors.

Due to current expansion the Company expect to increase its staff considerably over 1984.

They are seeking Data Processing Specialists who wish to broaden their experience and work in a professional and stimulating environment.

This is an excellent opportunity to become involved in projects that include:

- \* advising on computer strategy, selection, performance, security and feasibility, project management of new systems.
- \* a variety of products and hardware.
- \* a wide range of applications.
- \* clients from multinationals to small companies.

Successful applicants will have a good educational background, preferably to degree level and demonstrate a successful career to date. Equally important to your experience is your personality and communicative skills.

If you are interested in building an exciting career then contact Tim Nicholls quoting ref 7480.

(7282)

**Lloyd Chapman Associates**  
123, New Bond Street, London WY1 0HR 01-408 1670

# RPG III

## Join the High Flyers in Shropshire

We are a highly respected market leader in the consumer goods sector with a reputation for quality products that are enjoyed by a wide customer base. These products, together with innovative press and TV advertising, have elevated us to a very strong position within world markets and further growth is envisaged in 1984.

Within the next few months, we will be relocating our IBM System 38 facility from the City of London to Shropshire and we therefore now wish to recruit several experienced personnel with the knowledge and flair to make this move as smooth and efficient as possible and to contribute to our future success.



### Programmer c £9,500

Our first requirement is for a Programmer, probably with at least eighteen months experience on IBM GSD facilities and with an in-depth knowledge of RPG II or RPG III.

Initial involvement will be on order entry and distribution systems, but you can expect exposure both on development and maintenance in a variety of applications.

### Operators/Programmers c £8,500

We also wish to recruit two young Operators with some experience of IBM RPG programming who are keen to develop their skills in a progressive environment. After initial training in London, the successful Candidates will be given early exposure to a number of applications.

The excellent remuneration packages include four weeks annual leave, pension, life assurance cover and private medical insurance. Generous relocation expenses will be paid where necessary. These, combined with the very affordable housing and fine quality of life you can expect in Shropshire, make this an opportunity not to be missed.

To arrange a prompt and confidential interview, please contact our Advising Consultant, **Jim Mitchell** on **021-236 3781** (24 hour answering service) or on **021-427 2291** (Evenings and Weekends until 9.00 pm).

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(7206)



DALROTH

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## IBM/HP 3000 IMAGE NETWORK

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**£18,000-£30,000**

**DATABASE DESIGNER** - a key appointment requiring a sound DB design and implementation background. To be involved at all stages through to implementation. IMAGE experience essential.

**SYSTEMS and PROGRAMMING MANAGER** - to manage, support and maintain HP and IBM systems and communication software. A sound systems and programming background, ideally including HP and IBM, is desirable.

**SENIOR SYSTEMS ANALYST** - specific experience at senior level on inventory, Military Logistics (66/1 or 67/1 ideally), work performance scheduling and control systems would be ideal. Responsibilities will include sub-systems project development.

**SYSTEMS ANALYST** - systems experience gained on Materials/Inventory/Supply/Logistics systems combined with a COBOL programming background would be ideal. HP 3000/IMAGE or equivalent mini experience preferred.

**PROGRAMMERS** - a minimum of three years' COBOL programming experience required, the most recent of which should be on HP 3000 with IMAGE and ideally QUERY and VIEW.

**SYSTEMS PROGRAMMER** - for HP/MPE system to include support, performance monitoring, enhancements, tuning and maintenance. HP/MPE experience essential.

This Major Project is to provide a High Technology Supply and Maintenance System for the Royal Saudi Air Force. It is being designed from the conceptual level and will therefore break new ground in both Design and Concept.

Our clients will be in the U.K. to conduct final interviews at the end of January

For further information please contact Ian Murray West or Peter Henrick on day, 01-493 2947 from 8am-10pm or weekends Peter Henrick on 01-390 1640 quoting Ref. 5036 or use the application form on the Dalroth Centre Pull-out.

**DALROTH & PARTNERS LTD, 4 HALF MOON STREET, LONDON W1 • TEL: 01-493 2947**

### COMPUTER RECRUITMENT CONSULTANT (Director/Shareholder)

M.D.A. are a successful and well established group of companies with a multi-million pound turnover who are market leaders in the U.K. and overseas technical contract personnel employment business.

As part of our planned expansion we are about to diversify into similar but computer/DP related employment by launching a new company. We require an entrepreneur computer recruitment consultant to set up and run this operation. Applicants must therefore have proven experience and contacts within this field and will probably already hold a senior position. We can offer a directorship and shareholding, company car and salary which would reflect the importance of this position within the group.

Please write in confidence in the first instance to: Mr S.W. Morgan, The Chairman, M.D.A. Group, Watling St. Chambers, 21/23 High Street, Northwich, Cheshire, CW9 5BY.

(12871)

### STAFFORDSHIRE POLICE SYSTEMS ANALYST

£23,946 - £10,839  
and

### COMPUTER PROGRAMMER

£23,264 - £23,712

To work chiefly on the Operational Command and Control Computer System which is based at Police Headquarters, Stafford. The Systems Analysts will act as Deputy to the Principal Computing Officer.

Staffordshire Police is one of the foremost innovators in U.K. Police computing, and have pioneered the development of a number of important operational computer facilities.

The successful applicants will have extensive experience of on-line, real time computing, with a minimum of 5 years in the industry. A knowledge of Ferranti, Argus, 700 computer, architecture and programming language Coral 88 would be an advantage.

Application forms, returnable by 6th February, 1984, and further details available, on request, from: The Chief Constable, Stafford Department, Staffordshire Police, Chief Constable's Office, Carrack Road, STAFFORD ST17 0DG. Tel: Stafford 57717, Ext. 218.

(12858)

## PROJECT MANAGER

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We are a public company with sales in excess of £800 million per annum and a highly successful home computer business.

We are now looking to open a nationwide chain of business computer sales outlets with the emphasis on excellence in terms of sales techniques, product support and customer training.

The job involves starting the project from scratch including hiring staff, detailed sales and marketing planning and the selection of product.

Our first centre will open in June, 1984.

You must be a self-starter with a flair for getting things done. We would expect you to have a wide and full understanding of the business p.c. market with proven achievement in both sales and sales management.

You are likely to be aged 28-35 years of age.

There will be a great deal of travelling involved but the job will be based in the Reading area.

Safari is unlikely to be a problem to the right applicant.

Applications with full c.v. please to: F. W. Keating, 1 Redruth Avenue, Wigston, Leicester LE8 2JF.

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£11,000

We are a small, fast growing Business Systems Company providing, at present, predominantly consultancy services to a wide range of (mainly international) customers. The company is experiencing increasing pressure to provide bespoke software and to develop its own package software for clearly identified markets. Extensive use is made of a range of Nixdorf hardware and software. Applicants should possess sound programming skills, preferably in BASIC and COBOL, other languages will be considered. Systems experience in a business environment is preferable and the work is likely to require good communications skills. The company can, in return, offer you:

- ★ A stimulating and pleasant working environment
- ★ A range of bespoke and package software projects
- ★ The opportunity for career development which only an exciting, fast growing company can offer.

Please write to: Peter Davidson, Managing Director, PACT, 17 Lynde Crescent, TONBRIDGE, Kent TN10 3EX. Telephone: 0732 386011

**PACT**

(7283)

## COMPUTER FIELD ENGINEERS 1984

We specialise in Computer Engineers at all levels from trainees to Support Engineers, and our clients are all major in the industry. Our service includes free confidential advice on your future career needs. Listed below are a few of our many vacancies we have on offer:

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Extensive training given if you have electromechanical/electronic background in servicing, i.e. terminals - printers, etc.

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## System 38 RPG III Programmer

required  
in

## Bermuda

Our client, a subsidiary of one of the world's largest insurance groups, is in need of a programmer with at least one year's sound IBM System 38/RPG III experience to join its data centre team and take an active part in the development of a major new system.

If you are the person - with a financial applications background, with a sense of responsibility and initiative, who is outgoing, single and in your 20's - these are the rewards:

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- A very generous housing allowance
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Just remember, 1 year's + experience is all you need to make it worthwhile pursuing.

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Telephone: 01-638 8411 or 01-920 0801 (24 hr)

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(7275)

## SENIOR ANALYST/PROGRAMMER

**HP 3000**

**£13,000**

Our Client is a Central London based financial concern, part of a UK multinational group. They currently utilise an HP 3000/40 but will be upgrading shortly to a 3000/42. Due to expansion within their market they wish to appoint a Senior Analyst/Programmer to take responsibility for existing and future systems development.

Applicants, probably in their late 20's or early 30's, will have a sound background in COBOL with some exposure to systems analysis. Any knowledge of HP systems and software will be advantageous although not essential as management ability is the essential criteria. The successful candidate can expect a high degree of user contact and must therefore be an effective communicator at all levels.

In return our Client offers a generous starting salary with the possibility of a company car and a move into a management position at an early stage. If you are self motivated and looking for a challenge in an expanding environment, call Mike Harmer for further details.

**Apex Computer Recruitment Ltd.**

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Tel: 010 322 377 4193

## PERMANENT POSITIONS

**MVS Systems Programmers £20,000**

A number of installations require competent System Programmers. Experience of SNA and/or other telecommunication systems desirable.

**Systems 38 Middlessex c.£14,000**

Opportunity for Analyst Programmers on a System 38 in a growing young insurance company. Experience in insurance and/or retail applications is desirable but not essential. System 38 experience is not necessary for the Systems Analyst position. R.7343

**DEC VAX/PDP London & £8-£13,000**

**Personnel Home Counties**

A variety of positions currently exist for people with a minimum of two years' DEC experience using either BASIC, FORTRAN, COBOL or MACRO 11.

**Systems London £11,500-£13,500**  
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A progressive commercial bureau is seeking an experienced Systems Analyst to take a leading role within the organisation. A minimum of five years' DP with at least two as a Systems Analyst, with experience of either Bureau, Software House or Burroughs hardware will give the successful applicant a competitive salary and demanding but rewarding position. G.7285

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Financial organisation based in the City wish to recruit an experienced TANDEM Programmer to work in a progressive environment as part of a newly formed team. The position carries considerable benefits and a competitive salary is offered to the right individual.

## SENIOR RECRUITMENT CONSULTANT

**c.£20,000+**

We have an internal requirement for a Senior Consultant to handle recruitment of computing personnel.

You must have the ability and confidence to:

- Advise clients on their approach to recruitment
- Compile an analysis of the grades and experience of personnel required within staffing levels
- Present advertising alternatives
- Interview prospective candidates to present a shortlist
- Counsel both client and candidate to assist in their decision making.

We provide an excellent incentive package for the right people. Progression is available within the Company group for those wanting to progress.

Call Mike Deuncey on 01-439 1856.

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(7281)



# Advanced Software Systems

## Support/Systems Programmers Essex

We are a specialist technical centre within the ITT corporation building software tools to support the development of large and complex software systems to be incorporated in ITT Products. We have a local IBM mainframe running VM/CMS, and also use large MVS/TSO/SPF centres in Harlow and overseas, mainly in Belgium and North America, via our extensive data communications network.

Due to the rapid expansion of our activities, we now need two additional Support/Systems Programmers in our technical support group. Sound VM experience is essential. A knowledge of MVS would be advantageous.

The aim of the group is to assist the ESC's application programmers to concentrate on their

trade, not the mechanics of producing code. It has particular interests in SCRIPT/DCFSAM, PL/1, ACF2, 6670 laser printer and videotex.

Salary as indicated will reflect ability and experience in addition to this there is an attractive benefit package. Opportunities exist to expand your skills within ITT's worldwide organisation. Generous assistance with relocation will be given where appropriate.

If you are interested and wish to apply for one of these positions, please send a full C.V. to Mary Richards, ITT Europe Engineering Support Centre, Great Eastern House, Edinburgh Way, Harlow, Essex. CM20 2BN.

ITT Europe Engineering Support Centre



L.E.R.S.

The pharmaceutical research company of the SYNTELABO group is recruiting

## 2 Computer scientists

to work for their Clinical Research department

one, who will be responsible for a HP 1000 handling real-time data acquisition from laboratory instruments (HPLC, GC, etc.) and will develop scientific and graphic software for the analysis of these data.

the other, who will be responsible for the maintenance of existing programs and the installation of telecommunications links between the HP 1000 and other computers. Place of work: Paris and suburbs.

the other, who will be responsible for office automation and telecommuni-

cation problems within the department. who will be in charge of: word processing training, user support and the transfer of documents between HP, WANG and SIRIUS; use of all graphics tools used in document preparation and old to users; transfer of information between HP 3000, VAX, PDP 11, WANG, IBM 43XX.

who will also have to maintain and create diverse databases for use within the department.

Both candidates should have a university degree, be familiar with the mini-computers HP 1000/HP 3000, be aware of the problems relative to databases (relational) and their maintenance, and have some professional experience.

Send CV with photo and references to: L.E.R.S., Département Administratif et Technique, 58-60 rue de la Glacière 75013 Paris.



## EXPERIENCED SYSTEMS ANALYSTS & PROGRAMMERS

up to £10,500

+ Benefits

The Leicester Building Society is a progressive, long-established, and well-regarded financial institution. It has a reputation for being a leading employer of systems analysts and programmers. It is currently seeking experienced professionals to join its growing team.

We are seeking to appoint both experienced Systems Analysts and Programmers with a minimum of 18 months' practical experience who are looking to progress and expand their skills in a challenging environment.

Programmers must be familiar with Burroughs equipment. Competitive salary packages of up to £10,500 are offered for these positions depending on experience and qualifications. In addition there is an excellent benefits package including Concessional Mortgage and Continuity Pension Schemes.

Persons wishing to be considered for these vacancies should apply in writing to Neil Watt, Personnel Officer, Leicester Building Society, Chief Office, Glen Road, Oadby, Leicester LE2 4PR. Closing date for receipt of applications is 3 February 1984.



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Thorntons, the well known quality confectionary manufacturers are looking for an experienced programmer. Candidates (male or female) should have considerable programming experience using COBOL, and familiarity with Hewlett Packard 3000 hardware would be an advantage. We offer an attractive salary, excellent working conditions and full range of facilities. Please telephone or write for an application form to Executive Manager-Personnel, J. W. Thornton Limited, Derwent Street, Belper, Derby DE5 1WP. Tel: Belper 1077 3821 4181.



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## Programmer/Systems Adviser

Required to advise on the use of computer facilities by academic staff, post graduate and post experience management students. The duties will also include the maintenance of software on a Harris H500 computer and micro-computers.

We are looking for a graduate with a substantial practical knowledge of FORTRAN and BASIC. The salary will be in the range £4,500 to £6,000 per annum.

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Box number rap/lee should be addressed to:

Box Number

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One of Britain's leading International Software Houses seeks personnel with 2 years + experience on PDP equipment with knowledge of PASCAL to work on Process Control Systems. Also, Software Engineers from a VAX environment with experience of RTL/2 and/or FORTRAN to work on Data Acquisition and Simulation Systems.

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IMMEDIATELY

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Leading Manufacturer of data communications equipment requires Software Engineers to work independently developing PROTOCOLS and MODEMS. Knowledge of Intel 8085, ASSEMBLER, Structured Programming and at least one high level language ('C', PASCAL).

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# Computer Audit

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Will identify be well educated self-starters in the age range 27-35, with a financially orientated D.P. background in on-line and programming, with good communication skills and experience of computer audit. Success in this specific area could lead to other career opportunities within the Group as a whole.

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For further details please ring Tony Roberts on (0270) 627206 during the day or (0270) 624068 evenings and weekends.



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We are based in spacious new offices in Stanmore and need Field Support

Consultants for our growing customer base.

The position involves providing individual customers with advice and guidance on the strategic use of our software products.

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Please write, enclosing CV to:  
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The Broadway, Stanmore, Middlesex HA7 4DU.

هنا من الاصل

Cullinet

## OPPORTUNITY IN DATA COMMUNICATIONS

for experienced data communication engineer with commercial interest in becoming our

## U.K. SALES ENGINEER/SALES MANAGER

The product we are going to sell is a new generation protocol converter and associated equipment, manufactured in Holland.

More than one thousand units were ordered in the first year of sales in Holland and Germany.

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His commercial interest and management capabilities should enable him to simultaneously build up and take full responsibility for our U.K. operations. Drive and ambition are absolutely essential.

Having representative housing in the vicinity of London with a spare office room and telephone to start operations would be an asset.

Our proposal:

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If you are interested, write and supply us with the following details:

- Education, experience, references, photo and personal data
- Location of your house and description of the office (if applicable)
- Remuneration salary and emoluments

INCAS Amersfoortseweg 15, P.O.B. 211  
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## PROGRAMMERS IBM 4341

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# HOWARD

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Network Specialists + Instructors	Various Locations
S/W Engineer, process-control (chemical plant)	Holland
Systems Programmers, MVS+ JES3/MVS+ IMS	Germany
Systems Analyst databases, networks, etc. IBM H/W	Belgium

Please contact in the first instance: Gertie Petit on 01-952 8092 (office hours) or 01-868 0355 between 6-9 pm.  
Employment Business Section

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## We set the Technological developments. You set-up the Software Department.

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The quality of our range of High Tech medium tensile test instrumentation and recorders has won us international respect and a reputation for being market leaders. Because of our successful growth, we are going to handle all software projects in-house which now creates a key opportunity for a Software Project Engineer, a position eventually leading to setting up a Software Section.

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Please phone or send your CV to our recruitment specialist Ania Reynolds at PER, 62-64 High Street, Southampton, Hants. Tel: (0703) 38311.



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- GOOD management structure.
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**db executive (kingston) ltd**

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## PROGRAMMERS

Two Programmers are required, with a minimum of three years' Cobol experience, to work on applications on our IBM 4331 and ICL 2904 and DRS 20 equipment.

For the IBM systems CICS experience would be an advantage although training will be given where necessary.

Both positions involve work on development and maintenance projects. Applicants should be self-motivating and have experience in problem determination.

We offer a good salary according to age and experience and the conditions of employment are excellent.

Please apply to:

Miss Jill Cooper, Personnel Manager, ARISTON DOMESTIC APPLIANCES LIMITED, Ariston House, London Road, High Wycombe, Bucks. Tel: High Wycombe (0494) 33499.

**ARISTON** **COLSTON**  
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Department of Electrical and Electronic Engineering

Applications are invited for a post of Lecturer in the Department of Electrical and Electronic Engineering. Applicants should have research interests in one of the main research areas of the Department: Microelectronics, Computer Engineering and Signal Processing, Communication, Control and Instrumentation. Preference will be given to applicants with research interests in Computer-Aided-Design in one or more of these areas.

The appointment will commence on the nearest date that can be arranged, and will be on the scale £7,190-£14,126 per annum plus USS/UDOP benefits.

Further particulars and application forms (2 copies) may be obtained from the Personnel Office, University College of Swansea, Singleton Park, Swansea SA2 8PP, to which office they should be returned by Friday, 17 February 1984. (17052)

## BOX NUMBERS

Box number replies should be addressed to:

Box Number

c/o Computer Weekly  
Quadrant House, The Quadrant  
Barton, Surrey GU2 5AS

# £32,400

Tax-Free in the first 2 years

## Computer Instructors

British Aerospace has vacancies in Saudi Arabia for experienced Computer Instructors to join its staff at the Technical Studies Institute at Dhahran, where they will be responsible for training Saudi personnel in the programming and operation of modern computer systems.

If you have the qualifications and background of experience set out below, you could earn at least £15,831 in your first year, £16,581 in your second year tax-free, as a Computer Instructor...

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Responsibilities include providing students with a thorough grasp of the principles of computer programming and operations and preparing computer systems programme routines and procedures. Successful applicants will be required to give instruction in Cobol, machine coding, test routines and programme verification; operation of computer equipment and peripherals; and processing and control of data flow.

Applicants should have graduated from an appropriate civil or military Technical Training Institute, having gained HNC or equivalent in Engineering, Computer Sciences or Mathematics. They should be able to show at least 3 years' recent programming experience relevant to the Hewlett-Packard HP3000-44 computer installation which is the current equipment, using Cobol and Interactive Data Processing. Candidates must be familiar with modern computer-based training techniques and must have gained at least two years' experience as instructors in the past five years.

In addition to the high tax-free salary, successful applicants will receive free accommodation, messing, medical care and other benefits, including travel-paid UK leave.

Please apply in writing giving brief details of appropriate experience or telephone Preston 634317.

The Personnel Officer, Saudi Arabia Support Dept., 001/CW  
FREEPOST, British Aerospace Aircraft Group,  
Warton Division, Warton Aerodrome,  
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Unequalled in its range of job opportunities

# RPG III

## A success story in Shropshire

We are a highly respected leader in the consumer goods sector with a reputation for quality products that are enjoyed by a wide customer base. These products, together with innovative press and TV advertising, have elevated us to a very strong position within world markets and further growth is envisaged in 1984.

Within the next few months, we will be relocating our IBM System 38 facility from the City of London to Shropshire and we therefore now wish to recruit certain key personnel with the knowledge and flair to make this move as smooth and efficient as possible and to contribute to our future success.

### Systems Analyst c £12,000

The successful applicant will become an integral part of our small team, actively involved in projects from initial user contact, through systems specification and design, to programming and implementation. At least two years systems experience combined with a strong exposure to IBM System 34 or System 38 equipment is essential. Personal skills are equally important and self-motivation, resourcefulness and good powers of communication will ensure personal and professional credibility when dealing with both Data Processing staff and senior user management.

### Analyst/Programmers c £10,500

We also wish to recruit two experienced Analyst/Programmers with an in-depth knowledge of programming in IBM RPG and probably with at least twelve months analysis experience on GSD equipment. The successful Candidates will be capable, not only of meeting deadlines with the minimum of supervision, but also of exhibiting a positive yet flexible attitude to their work.

The excellent remuneration packages include 4 weeks annual holiday, immediate life assurance cover, pension scheme and private medical insurance. Full relocation expenses will be paid where appropriate. For an immediate and confidential interview telephone our Advising Consultant Jim Mitchell on 021-236 3781 (24 hour answering service) or 021-427 2291 (Evenings and Weekends until 9.00 p.m.).

Technical, Sales & Management Appointments

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# Applications Software Products

## Development Staff Hampshire

**Systems Consultants**  
From £12,000 to £16,000  
plus car scheme

**Technical Team Leaders**  
From £10,000 to £13,000

**Programmers**  
From £8,000 to £10,000

Our client a fast-growing systems house part of an international group is seeking a number of key staff to support the development and implementation of software products and services for client companies operating in the industrial sector.

- Minimum of six years data processing experience of which at least three years must be in systems
- Previous involvement in the design of interactive, database systems desirable
- Applications experience in manufacturing, commercial or accounting systems essential
- Supervisory experience preferred

- Minimum of four years COBOL experience
- Previous involvement in the design and development of interactive database systems desirable
- Some supervisory experience preferred

- Minimum of two years COBOL experience
- Career progression opportunities available in both the technical and systems areas

Rewards are geared to recruiting and retaining high quality staff. Career opportunities are excellent for those individuals who prove capable of contributing to our success. Full training will be provided in our products and methods. Removal expenses will be paid where appropriate.  
To apply contact: Brian Postles

CADsearch, London House,  
271-273 King Street, London W6 9LZ.  
Telephone: 01-741 8011.

**CADsearch**

لندن من اجل



**c£10,000**

## Rural Staffordshire

**Based in a beautiful area of rural Staffordshire, we are a highly successful Construction Group. So successful that in the last three years we have increased our turnover from £20m to £50m despite the recession in the industry.**

We have always regarded computer based information systems as a vital component of our achievements to date and of our future development, and currently utilise a DEC PDP 11/34 with DIBOL programs operating under RSTS/E.

Because of the proposed expansion in both hardware and software, we now wish to recruit a Programmer/Analyst, probably in his/her mid to late 20's with experience of programming in an interactive language (BASIC would be ideal, but is not essential). Previous exposure to micros would be a distinct advantage, as would a knowledge of the construction industry.

**We offer genuine prospects of advancement in a Company that is determined not to stand still. We fully intend to maintain and even improve our position in the industry.**

For an immediate and confidential interview, please contact **Jim Mitchell** on **021-236 3781** (24 hour answering service) or **021-427 2291** (evenings and weekends to 9.00 p.m.).

### Technical, Sales & Management Appointments

47311

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061-833 0427

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Boite 4, 1050 Bruxelles  
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**New York  
Telecommunications Control Technicians  
\$27,950 – \$29,000 p.a.**

One of the world's largest brokerage organisations is currently expanding its already considerable network engineering department.

Within this plan lies an urgent need for a number of Telecommunications Control Technicians whose role will be to accept problems from branch and regional offices and arrange appropriate solutions.

Required knowledge will include: Modems, Multiplexors, Diagnostic Equipment, 3705's, 3270 BIs, etc. Spectrum Datascope, etc.

OND or Degree in electronic engineering is preferred, with 2 years relevant work experience. Long term assignments, with excellent career

opportunities are offered, and as well as highly competitive rates, successful applicants will benefit from our superb relocation scheme. This includes family airfares, visas, medical and dental cover and all necessary assistance in settling in.

**Interested applicants should urgently contact Mary Coleman on 01-836 8411 (24 hours) to arrange an initial interview. Successful candidates will then be interviewed by our Client in London during the week of February 11th, 1984. Alternatively send your fully detailed C.V. to Computer People International, 68/69 St Martin's Lane, London WC2N 4JS**

**VI** Computer  
People *International*

• 01-836 8471 Computer People London, VI House, 46-49 St Mark's Lane, London WC2H 4JS • 01-680 4053 Computer People South, 27 George Street, Croydon CR9 3H  
 • 021-643 8291 Computer People Midlands, Alpha House, Birmingham B1 7TT • 041-471 1466 Computer People North, Sovereign House, Sheppard Road,  
 Cheshire, Cheshire S20 2W • 01-836 0411 Computer People International, VI House, 46-49 St Mark's Lane, London WC2H 4JS  
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 Alpha House, Birmingham B1 7TT • also offices in New York, Rochester and Los Angeles

## The Market Leaders

# Communications Development

# Project Leaders Software Engineers

## Berkshire

An expanding marketplace is powering 230 million computer systems looking for additional Project Leaders and Programmers/Designers to join its Networking Software Development Team.

We are looking for people who want to develop their career prospects and gain valuable experience of networking. UNIX and C, an exciting combination.

The company is committed to providing the following communication products:

- ★ UNIX/C
- ★ Local Area Networks
- ★ X25
- ★ File Transfer
- ★ Electronic Mail
- ★ Remote Terminals
- ★ Network Control

Although we have shown that we have a precedence in some of our earlier design and implementation. This is a predominantly technical position with scope for further technological advancement. Previous team members considered it desirable but not essential for a manager to be able to demonstrate good organisational ability.

Software Engineers should have a minimum of two years of full-time software development experience in a block-structured high-level language, eg Pascal, Fortran, etc.

Report includes a general overview of training activities, internal and external training opportunities, and a list of training topics.

if you have any questions, please send  
me a message on the forum.

# Bat CVR

هكذا منه الأصل

**DATAMATICS**  
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Datamatics, Freepost, Surbiton, Surrey KT6 5BR



# Programming Professionals

## Cobol

### Mini-Computer Environment

### North West

### Salary to £12,000

### + Relocation

Our client is a highly successful, profitable company operating at the forefront of technology. Located in an attractive area of Cheshire, it is well serviced with motorway, road and rail links. Following a major review of its requirements, the company has identified the following career opportunities:-

#### Team Leader Circa £12,000

The successful candidate will lead a team of around six programmers working on a variety of management information systems, primarily developed on a powerful mini-computer. It is likely that he/she will have at least five years programming experience including some staff supervision. The person appointed will be responsible for imposing and maintaining programming standards within the team, and knowledge of structured programming techniques would be of particular interest.

#### Senior Programmers Salary between £9,600 and £11,300

These positions represent excellent opportunities to join small project teams engaged on a range of commercial systems. The company offer a stimulating working environment developing systems on-line and using database.

Candidates for all positions should be able to demonstrate sound Cobol skills, gained on any equipment, either mini or mainframe, preferably in an on-line environment using database techniques. Full training will be provided to familiarize the successful candidates with hardware and software.

Career prospects and conditions of employment are excellent, including flexitime, 37 hour week, over six weeks holidays and a relocation package where appropriate.



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For further details, please contact Barry Turton on (0270) 627206 weekdays, or Alsager (09863) 4743 during evenings and weekends, or write to him at the address across.

## Real Time Software Specialists

### Farnborough, Hants. To £13K

Real Time Developments is an independent systems house specialising in high-quality real-time software systems. We have an immediate requirement for a number of real-time software specialists to enable us to expand in line with our plans for 1984.

The people we are looking for are preferably graduates with two or more years experience in any real-time applications. Experience should have been gained on minis or micros, with knowledge of both assembler and high-level languages.

Apart from a highly competitive salary, benefits include BUPA, health assurance and paid overtime. The company offers ample scope for genuine career advancement, with employees being encouraged to assume responsibility as soon as they are ready for it.

1984 holds great promise for RTD; why not be part of our success story? For more details contact Geoff Burnes on Farnborough (0252) 846213 or write to



Real Time Developments Ltd.,  
Lynchford House, Lynchford Lane,  
Farnborough, Hampshire, GU14 6JA.

Ferranti Computer Systems Ltd.

## Lecturer Computer Hardware

A computer professional is required as a hardware lecturer in our expanding Technical Training Centre at Bracknell.

The person appointed will be required to contribute to the teaching of microcomputer technology and real-time computer architecture as applied to the Company's wide range of military-computer products.

Applicants should possess relevant professional qualifications and/or experience. The possession

of a teaching qualification would be an advantage but is not essential as guidance in lecturing techniques would be provided.

As you would expect of a major international company, we are offering attractive salary and benefits packages, which include assistance with relocation where appropriate.

If you are interested please contact the Recruitment Section at Ferranti Computer Systems Ltd, Western Road, Bracknell, Berks. RG12 1RA. Tel: Bracknell 483232, ext. 3471. Please quote ref. B/1063/CW.

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The IBM SYSTEM 34/36/38 Recruitment Specialists



### IBM SYS/38 PROGRAMMER/ANALYST PROGRAMMER

### To £11,500 + Benefits IVER IN BUCKS

**FABERGE:** A multinational corporation whose name is recognised worldwide as being synonymous with excellence and style. Their products are accepted as market leaders with representation in over 124 countries. The corporate philosophy is of a young and dynamic atmosphere with continuous long term development plans.

**THE VACANCY:** Requires a professional who would like to work in a relaxed and informal atmosphere. The successful applicant will be encouraged to 'roll their sleeves up and get involved'. Every opportunity will be given to develop both responsibility and technical knowledge. RPO experience and self motivation are essential and the ability to communicate with users is important.

**THE CHALLENGE:** Will be in developing the sales force manager and solving the marketing division's long term software needs. In addition helping to complete the successful installation of Maapics with thought being given to the purchase of additional add-ons.

**TO APPLY:** Please call Donna O'Callaghan on 01-354 1055 during office hours or on 01-474 9495 during evenings and weekends. Response will be treated with strict confidence.

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## SYSTEMS DESIGNER/ANALYST

### to £14,000 per annum.

We have an interesting opportunity for a talented designer to join a growing systems house based in the City.

The application areas are mainly financial and it would obviously be an asset if candidates had previous City financial experience, however we do not rule out the likelihood of proposing candidates from other backgrounds.

This position will suit a d.p. professional who is either currently a systems analyst/designer or alternatively an analyst programmer who wishes to move into a more demanding role.

If you feel that you have the personality and strength of character to handle a challenging role in a fast moving environment then please contact Chris Morrow on 01-837 0451 for further details.



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LIMITED**

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## 01-837 0451

(7288)

## Insurance Systems Development

### £10—£15,000

Programming  
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Data Base  
London Based  
Generous Package

Our clients are market leaders in the insurance sector with a continued commitment to the enhancement and development of their computer systems.

A range of staff is required and the job titles available include ANALYST PROGRAMMER, DESIGNER, ANALYST, SENIOR ANALYST and DATA BASE ANALYST.

We are particularly interested in candidates with an IBM background which includes programming in COBOL or PL/I together with exposure to on-line or data base orientated systems. IMS, CICS or DL/I would be particularly relevant in this context.

Career-minded technical staff are promised an environment where effort and achievement are rewarded, where all the necessary training facilities are provided and where staff development is considered of paramount importance.

For a confidential discussion contact T.C.R. in London or alternatively write with your C.V. quoting RS8401.



## Targa Computer Recruitment

19 Ropemaker Street London EC2Y 9AS  
Monaco House Bristol Street Birmingham B5 7AS

Telephone 01-588 9871  
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Telex: 25851  
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## THE MASS STORAGE PEOPLE

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#### CUSTOMER SUPPORT

#### Support Technicians £10-14K Plus Car

To work within the Customer Support Department providing both pre and post sales solutions. Successful applicants should possess good communication skills and a wide knowledge of 8 and 16 bit micro computer systems preferably at a software development level. These challenging positions offer the career minded individual the chance to gain total support experience covering such aspects as pre/post sales technical enquiries, troubleshooting and the organising/presenting of demonstrations and seminars.

#### SOFTWARE DEVELOPMENT

#### Software Engineers £8-14K

To join the Company's highly skilled and resourced development team working with MSDOS, UCSD P-System and CPM family operating systems. Successful candidates should have sound operating systems level experience of 8088, 8086 and 6502 microprocessors together with 8086 machine code, CPM/86 and PC DOS/MSDOS. Additionally, experience of APPLE native operating systems and the UCSD P-System would be desirable. Stretch your system skills to that limit as you design and implement high level (PASCAL and 'C') utility software, low level (8086, 68000 and 6502) operating systems and BIOS interfaces.

**All positions advertised provide unparalleled career opportunities for both technically orientated and management seeking candidates.**

For further information please contact **Adrian Hardy** on **01 835 0671** (24 hour answering service) or **Walton-on-Thames (0932) 224766** evenings and weekends.

#### QUALITY ASSURANCE

#### G.A. Controller - Hardware £13K Plus Car

A unique position within the ICE Organisation. The successful candidate must possess a digital electronics background, ideally having worked for an equipment manufacturer, with a proven track record in hardware quality assurance. Initially heading up a small team of test engineers, planned growth within this department in 1984 is exceptional. For the right individual the scope is limitless, with an initial brief that includes responsibility for budgeting, equipment selection and establishing test procedures. The position interacts with field service, third party maintenance sources, development and suppliers.

#### QUALITY ASSURANCE

#### Test Engineer £9-10K

Working within the Testing Department, this position would suit a candidate with supervisory potential. A knowledge of 6502 and Z80 microprocessors is sought together with a knowledge of VLSI and TTL. Provides exceptional opportunity to develop one's career utilising the latest technical equipment in micro technology.

**Independent Computer Engineering** are market leaders in the field of intelligent mass storage/multiplexing and data back-up products for the microcomputer industry.

Since their formation, when they launched the first UK designed hard disk for the APPLE market, ICE has been instrumental in solving the problem of shared mass storage within the micro computer arena.

The turnover for 1983 was 300% up on that of 1982, and with the recent announcement of yet another innovative product range, ICE can now justifiably claim to be a major force within micro computing technology.

1984 heralds yet another year of expansion with impressive in-roads being made in local area networking, hard disk interfacing and micro-computer support.

To enable such an extensive development programme to run smoothly, high calibre, dedicated and determined computer professionals are needed now within the following technical areas:-

# At the Centre of Development

## Analyst Programmer (Data Specialist)

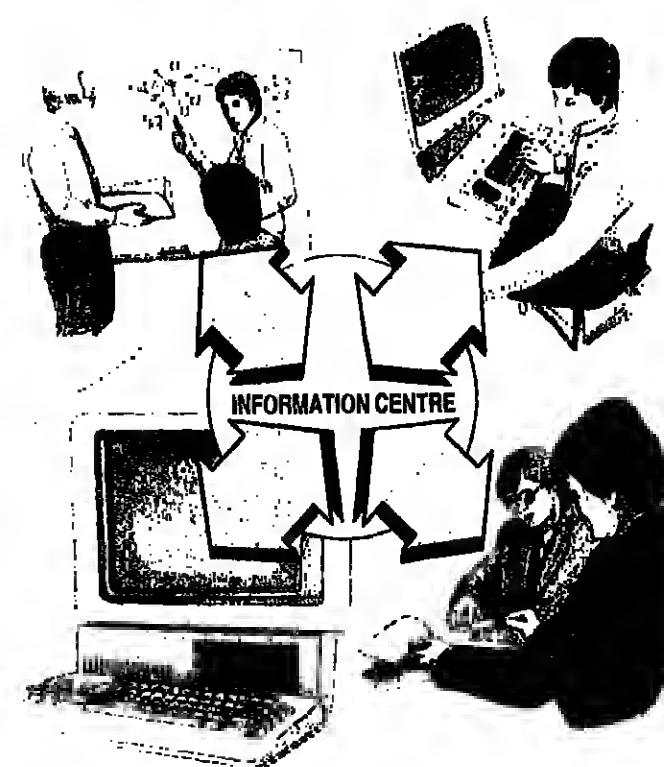
We are seeking an analyst programmer, with database experience, to fill the role of Data Specialist. Responsibilities include managing the effective use and relevance of data resources, defining data requirements for end user applications and providing copy management facilities. In addition the Data Specialist will prepare data for manipulation by end user computing tools, so the ability to assess suitable software tools is required. The capacity to develop and implement education aids is necessary.

You should have four to five years programming experience with a sound Cobol background in at least two hardware environments one of which should be IBM, preferably 4341. Knowledge of high level languages such as RPG II, Easytrieve and database, such as DL/I, Total or Adabas is required, along with the ability to present the Centre's services to users.

**Salary To £14,000**

**Location: London**

For further details including company information please ring Francesca Drinkwater or return the coupon below.



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## D.P. Recruitment

A Division of Computer Services Limited  
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Address \_\_\_\_\_  
Home Tel: \_\_\_\_\_ Work Tel: \_\_\_\_\_ Ext: \_\_\_\_\_

TK 231

### COMPUTER AUDIT Senior Auditor Data Processing

BATH up to £12,144  
A Senior Auditor (D.P.) is required to replace a recently promoted member of a small team based at Sydney Wharf, Bath.

The person appointed to this position will be engaged in:-  
[i] Approving the soundness and adequacy of operational procedures within the Computer Department.

[ii] Assessing the adequacy of controls in both developing and existing computer applications.  
[iii] Writing file interrogation programmes for audit purposes.

He/she will be responsible to the Assistant Audit Manager (Data Processing) but will work largely independently on investigations and report preparation for discussion with senior management. Accounting experience in a computer environment with familiarity with operations, systems design and programming is essential.

Salary will be within the range £10,499 - £12,144 and the benefits normally associated with a large, progressive organisation will apply including, where appropriate, relocation expenses.

Application forms can be obtained from:- Recruitment Office, South West Gas, Riverside, Temple Street, Keynsham, Bristol BS18 1EQ. Telephone (02-736) 61717 ext 3577.

Closing date for applications: 3rd February, 1984.

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## FOR PROGRAMMERS OPPORTUNITIES IN COMMUNICATIONS

£9-£13.5K Canterbury, Surrey

Communications is the fastest growing and most exciting sector of the computer industry. Our client is continually demonstrating its expertise in the implementation of voice response, viewdata and associated communication and network systems. This has led to an impressive list of major companies throughout the UK and Europe who have chosen our client's products as the best available for their needs.

Opportunities have arisen for a Senior Programmer and Programmer to become involved in the development of exciting new communications products. Those seeking real responsibility will see projects through from feasibility to implementation and have the opportunity to provide some sales support to customers.

**Working in a small, friendly and informal environment will ensure that endeavour and application are instantly recognised and subsequently rewarded.**

Experience of communications software development is essential for the more senior position. Successful applicants will have:-

- Experience of Assembler languages, preferably DEC MACRO 11.
- Minimum of 2 years software development.
- High level of motivation.

Company benefits include regular salary reviews, excellent career prospects, free family medical insurance, generous pension scheme and relocation assistance where appropriate.

For further details please telephone Keith Taylor on Reading (0734) 595346 or write enclosing full c.v. to our Reading Office. Interviews will be held in London and Reading.

**McCOURT COUSINS LTD.**  
Computer Recruitment Consultancy

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Telephone 01-439 6288

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# COMPUVAC

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## UNIX AND "C" EXPERIENCE

FROM ONE YEAR'S PROGRAMMING UP TO SENIOR SYSTEMS ANALYST, URGENTLY REQUIRED

My Client offers the opportunity to develop your DP skills in a new, progressive Division committed to the latest advances in modern technology.

This International Banking Organisation is on Phase One of a new project to develop a Security Trading System being implemented on large minis. Banking experience is useful but not essential, though you must be able to work under pressure and to time schedules in a team of 12. My Client offers career prospects as well as the usual banking benefits which include mortgage subsidy, free pension, interest-free season ticket loan, etc.

PLEASE CONTACT JILL HARVEY OR JIM CHRISTIE, DAYTIME 250 0456 EVENINGS/WEEKENDS: JILL 01-701 5530 JIM 01-858 3884

The above is one of many UNIX and "C" vacancies we have in London and the Home Counties, in both Commercial and Scientific/Technical environments. There are also hundreds of other positions available requiring skills in other languages and computers in our Commercial Mini/Micro and Scientific/Technical Divisions.

## IBM

### IBM SYSTEMS PROGRAMMERS

£12,000 TO £19,000 + BENEFITS

A large number of our major IBM clients are currently looking for experienced Systems Programmers. You will have a minimum of two years' experience either on DOS/VSE and VM Systems or MVS systems, ideally using COBOL or ASSEMBLER languages and associated software including CICS, DB1, Any Communications/Networking experience would be extremely advantageous in some cases. Ref: JH/CW

### IBM COBOL PROGRAMMERS

TO £12,000

If you have at least two years' programming experience using IBM COBOL either on DOS or MVS systems and would like to move into a stimulating development environment, a number of companies based in Central London would like to hear from you. Many Senior Programmers with at least five years' knowledge of CICS/DB1 or associated online systems. Ref: JH/CW

### PL1 PROGRAMMERS

TO £11,500 + BENEFITS

A large financial institution based in the Home Counties are looking to recruit experienced PL1 Programmers with at least two years' experience working on OS/VS1 or MVS systems. You should also be familiar with program design, coding, testing etc. and be able to assist other staff with problem solving and training. A generous benefits package is offered including a mortgage subsidy and relocation expenses. Ref: JH/CW

### IBM ANALYST PROGRAMMERS

£11,000-£13,000

Experienced Analyst Programmers are urgently sought by large IBM clients in the Home Counties. Suitable applicants will have 2-4 years' experience in an Analyst Programmer role, at least one of which will have been on an Analyst environment. Essential requirements include IBM 4100 experience on MVS systems using COBOL, CICS, DB1, CICS and DB1 would be a major advantage. Ref: JH/CW

### CONSULTANT ANALYST PROGRAMMERS

£10,000-£14,000

Three of the largest Financial Institutions in the Home Counties are looking to recruit experienced IBM Analyst Programmers with at least two years' experience in an Analyst Programmer role, at least one of which will have been on an Analyst environment. Essential requirements include IBM 4100 experience on MVS systems using COBOL, CICS, DB1, CICS and DB1 would be a major advantage. Ref: JH/CW

## OTHERS

### HONEYWELL

TO £11,000

Vacancies in W. London, Bucks, Surrey, Kent, at all levels for Programmers with sound GCOS skills, particularly ZDS and IDS. Pluses include bonus scheme, cars, etc. Programmers with GCOS/NETWORKING Technical Skills are particularly sought. Ref: 01/CW

### ICL 2904 AND 2900

TO £12,000

Numerous vacancies at all levels in sound ICL Programming skills. Particular requirements are for VME/B skills coupled with IMS and/or TP. Numerous opportunities on the 2904 ME29 and/or again TP skills are available. Some requirements for 540/520 talents also. Enquiries should be made to the commercial and financial banking. Ref: 01/CW

### UNIVAC

TO £10,500 + PERKS

Analyst Programmers with Database and/or Online skills, minimum two years' experience in an Analyst Programmer role, at least one of which will have been on an Analyst environment. Essential requirements include IBM 4100 experience on MVS systems using COBOL, CICS, DB1, CICS and DB1 would be a major advantage. Ref: JH/CW

### ME29, TPS

£8,000 TO £10,500

Three positions in a Financial Institution requiring experience with ME29, ideally you will have TPS experience and training. Who be considered for experienced COBOL, PL1, CICS, DB1, CICS and DB1 would be a major advantage. Ref: JH/CW

## IMMEDIATE CONTRACTS!

BURROUGHS, ALL LEVELS, MED. SYSTEMS  
COBOL, DMS II, GEMCOS, 6 MONTHS  
B20, ANAL. PROG., COBOL, PASCAL, COM.  
MERCIAL, 12 MONTHS  
PL1, MVS, ANALYST PROG., COMMERCIAL  
VERY URGENT

ANALYST, TOTAL DATABASE, ICL, VME/B,  
COMMERCIAL, 6 MONTHS  
HONEYWELL, LEVEL 6, PROG., COBOL,  
SCREENWRITE, MIN. 1 MONTHS  
FOR THESE AND MANY MORE CONTACT  
SIMON FOSTER

## IBM

### IMS PROGRAMMERS AND ANALYSTS

TO £16,000 + BENEFITS

One of the leading Banking organisations is currently looking for IMS specialists to work in their development area on large financial systems. Candidates should have a proven track record using IMS DB/DC and have programming in COBOL and/or PL1. Previous banking experience in a related environment would be highly advantageous. Ref: JH/CW

### IBM BUSINESS ANALYSTS

£10,000-£15,000

A large Engineering Company based near Central London wishes to recruit Commercial Analysts with two years' experience on IBM MVS systems. You will have come from a programming background using COBOL and ASSEMBLER and probably CICS. The position would involve exposure to LOGON and through this to other applications. It would be a decided advantage. Ref: JH/CW

### IBM DATABASE ANALYSTS

TO £14,000

This financial organisation is looking for experienced Database Analysts and coordinators with a sound knowledge of the IBM DB/DC and/or IMS systems. You will have come from a programming background using COBOL and ASSEMBLER and probably CICS. The position would involve exposure to LOGON and through this to other applications. It would be a decided advantage. Ref: JH/CW

### IBM SYSTEMS DESIGNERS

£10,000-£13,000 + BENEFITS

Three positions in a Financial Institution requiring experience with ME29, ideally you will have TPS experience and training. Who be considered for experienced COBOL, PL1, CICS, DB1, CICS and DB1 would be a major advantage. Ref: JH/CW

### GSD PROGRAMMERS & ANALYST PROGRAMMERS

£0,000-£13,000 + BENEFITS

Three positions in a Financial Institution requiring experience with ME29, ideally you will have TPS experience and training. Who be considered for experienced COBOL, PL1, CICS, DB1, CICS and DB1 would be a major advantage. Ref: JH/CW



ROAD TRANSPORT INDUSTRY  
TRAINING BOARD

## SYSTEMS ANALYST

SALARY: £12,027 p.a.

The Board requires a Systems Analyst to join a small team at its Wembley Headquarters. An ICL ME29 (1Mb, tapes and discs) working under TME has recently been acquired.

A major restructuring of the Board has necessitated re-examination of all applications and many are being re-written rather than converted. In addition packages are being evaluated for the accounts, sales and purchase ledger systems. Whilst the successful applicant will be involved in a wide range of systems the first task is likely to be the implementation of this package and experience in accounting systems will be an advantage. The need for a small amount of COBOL programming occasionally arises.

Terms and conditions of employment include 20 working days holiday eventually rising to 25, contributory pension scheme and life insurance, a 35 hour week and Luncheon Vouchers.

Please telephone the Personnel Department for an application form on 01-902 8880 ext 334.

Norsk Data is a rapidly expanding manufacturer of 18 bit mini and 32 bit superminis with our European and UK Headquarters based in the Berkshire town of Newbury. We also have a rapidly growing R+D activity at Newbury, and are looking for self-motivated individuals to expand our

### ADA COMPILER DEVELOPMENT

The successful applicants would be able to look forward to a demanding and interesting career in the development of complex software. They will have a good education and at least one year's experience in compiler development, preferably with a manufacturer or software house. They should be able to work in small teams and accept responsibility for their work immediately. The standards we set are high, and the salary will be commensurate with experience and ability. The company also provides help with re-location, private health insurance, contributory pension scheme, subsidised canteen and generous holiday allowance.

Please telephone  
Andy Peppardine on  
Newbury (0635) 35544,  
or if you prefer, write  
sending a CV to:  
Norsk Data Limited,  
Strawberry Hill House,  
Bath Road, Newbury,  
Berkshire RG13 1NG.

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Our client, a leading manufacturer of commercial and industrial micro systems, is looking for Applications/Support Engineers capable of Hardware/Software problem handling whilst being creditable at all levels.

Educated to Degree/H.N.C. level, technically competent with a commercial flair???

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## IBM SYSTEM/34

MULTIMILLION POUND BANKING AND INVESTMENT GROUP

Requires a very good Analyst/Programmer in the role of Man to take charge of System/34 installation and to develop both banking and property management systems.

Preference will be given to individuals with at least three years' relevant System/34 experience and the ideal candidate should have experience of working in a banking environment.

Salary and employment conditions will be above average and will reflect the importance placed on having a motivated and capable person in this important job.

Replies to Box No. 1263

# PERMANENT

### Programmers

Central London

£11K

Minimum two years' experience IBM 34, 36 or 38, RPGII or III, £11K Project Leaders/Consultants with good DP experience, £Neg Banking or insurance preferred. Above to work in areas of Dev, MKTG or Quality assurance. All applicants must be willing to travel abroad at short notice. Ref: 387/DF

### Prog./Technical Support

Central London

£12K NEG

Graduate preferred, minimum three years' COBOL programming experience with ability to communicate effectively at all levels. To design interrogation packages for users, prepare and present in-house training courses and provide technical support. Opportunity for some travel. Ref: 388/DF

### Project Leader/Programmer

City

£11K NEG

Minimum two years' experience for conversion of IBM PC micro computer network, must be able to communicate effectively and aid promotion of product. Opportunities to learn micros, gain banking skills and, in future, transfer to USA if desired. Ref: 389/DF

### Programmers

Worcester

£NEG

(a) Good experience of VAX/PASCAL. Must communicate effectively as working with the users.  
(b) Good experience of DEC PDP11 or VAX with PASCAL, CORAL or FORTRAN. Radar experience an advantage. Ref: 390/DF

Contact Diana Fabregas at KPG or 01-769 8714 (evening or weekends)

### Analyst/Programmer

Essex

£8,500 to £12,000

Nationwide manufacturing company seek ambitious Analyst/Programmers with minimum 3 years' experience of working in an IBM 4341 environment running under DOS/VSE, CICS and DL/1. Fluency in COBOL is pre-requisite together with experience of Librarian. If you enjoy working in a team, can absorb pressure and possess good communication skills that is the position for you. Ref: 8205/HP

### Systems Programmer

Wiltshire

To £11,000

A minimum three years' experience of Systems Programming on ICL or DEC Hardware with sound knowledge of FORTRAN and COBOL could qualify you to enter an exciting environment with our client - a household name in the publishing field. Ref: 8359/HP

### Hardware/Software Engineer

Hants

£7,000 to £16,000

Our client, a rapidly expanding company specialising in the manufacture of Communication Hardware, require quality personnel with an electronics background. Experience on Intel Z80 micros and Disc interfacing together with familiarity in a R and D environment are pre-requisites. Ref: 8305/HP

### Data Processing Manager

Herts

Min. £12,000

Electrical manufacturing company require DPM with sound fluency in RPG II on an IBM system 34. Experience of MAAPICS together with sound communications skills will qualify you for entry into a dynamic user-orientated environment. Ref: 8383/HP

Contact Haydn Parry at KPG

### Analyst Programmers

Surrey

£10K

Good commercial background is required by this company who are currently looking for an Analyst Programmer to work on their ICL ME29. You should possess solid programming experience with at least one year at Systems level in an on-line environment. Ref: 8368/PH

### Analyst Programmer

Bucks

£12K+ Car + Bonus

This job involves talking to customers about new systems/enhancements etc and providing support after successful implementation. You should be self-sufficient with good COBOL experience and will be working on Honeywell level 6. Ref: 8348/PH

### Programmer/Analyst

West Sussex

£9,500K+ Bonus+ Relocation

This small DP department are currently looking for a COBOL programmer with a minimum of two years' experience in an on-line environment, preferably on the Honeywell Level-B. Ref: 8362/PH

### Cobol Programmers

Surrey

£8K to £10K

Two programmers with a minimum of 12 months' solid COBOL required for development work on Burroughs B1000 series. Ref: 8388/PH

Contact Peter Hennessey at KPG or 0283 516322 (evenings or weekends)

A large DOS/VSE, CICS, DL/1 installation in West London require the following staff:

Software Manager - to supervise D/Base and Support Group - £18,000

Systems Programmer - solid DOS/VSE experience - Negotiable

Database Co-ordinator - experienced DL/1 (or IMS) person - £15,000

Jnr Systems Prog. - for statistical analysis work in support group - £10,500

Contact David Mason Johns at KPG or 01-747 0989 (evenings or weekends)

**KPG**  
01-948 5922

KPG Computer Support Services Limited  
Cobden House, Park Lane, Richmond, Surrey, TW9 2RA



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# Our investment in communications will...

Make 1984 the year you joined one of our small teams of multi-disciplined Engineers at New Southgate. There you'll be working in a stimulating environment alongside highly skilled professionals with a mission to take up the challenge of tomorrow's communications systems and expand our business in the highly competitive UK and overseas markets.

We are currently involved in several of the most interesting telecommunications projects of the future which must inevitably evolve into fully integrated information delivery systems optimised for both voice and data. Among

these STC's new digital telephone switching system, already of proven international performance, is now undergoing extensive UK software design, development and adaptive engineering.

While the course of the information Revolution can be defined in broad contours, it cannot be predicted in detail. Whatever predictions are made today are bound to be overtaken by accelerating technology and shifting demand. What is predictable however, is the need for a number of key men and women to join us in a variety of functions:

## ...take your career into the 21st century now...

**SYSTEMS DESIGN**  
Team Leaders — Systems Engineers  
**SYSTEM DEVELOPMENT SUPPORT**  
Team Leaders — Software Designers — Programmers —  
VAX/IBM Software Support Tools Development  
**SOFTWARE SYSTEM INTEGRATION**  
Team Leaders — Database Administrators — Software  
System Builders  
**MICROPROCESSOR APPLICATIONS**  
Analogue/Digital Interface Designers (Intel 8086)  
**EXPERT SYSTEM DESIGN**  
Section Head — Knowledge Engineers  
**ADVANCED TEST DEVELOPMENT**  
Senior Engineers — Hardware/Software

In all cases, we are looking for ambitious and committed Engineers who are qualified to Degree level or equivalent and can add to the depth of experience within our existing professional teams.

This is your opportunity to make a major contribution to projects capable of transforming the field of voice and data communications. In consequence, we are offering salary packages designed to attract the best people. Generous assistance with relocation expenses is available as appropriate.

## ...Switch to STC.

Take the most important step in your career by telephoning us on 01-368 1234 and asking for Vaughan Hartridge on ext. 2215 or Roger Edmonds-Brown on ext. 2579.

Alternatively, phone Vaughan Hartridge on St. Albans (0727) 60043 or Roger Edmonds-Brown on 01-361 2931 on any weekday evening (between 8-10pm) or Saturday or Sunday morning. If you prefer, write with full details of your experience to: Vaughan Hartridge, The Recruitment Centre, STC Telecommunications Limited, Oakleigh Road South, New Southgate, London N11 1HB.

Developing tomorrow's communications technology  
**STC TELECOMMUNICATIONS**

STC TELECOMMUNICATIONS

## Software Designers Analyst/Programmers & Programmers for our Software Development Team and Online Project Teams

### The Company

Telecomputing has, over the last ten years, established an enviable reputation as a leading independent software house. Our main product, TPS, is used at 450 installations around the world. TPS provides a complete transaction processing environment which is unique in the facilities and portability it offers to its users.

Another very important part of the Telecomputing operation is our Client Services division. This provides consultancy, design and programming services to our customer base. We specialise in turnkey projects providing first class systems on time and on cost.

Telecomputing is now recruiting more people to help us achieve our exciting objectives. We need designers and software programmers to give us the extra capacity to produce the software products that are needed to overcome the applications backlog and allow our users to realise the full potential of their hardware.

Our client services team is experiencing unprecedented demand for its resources, so we need more people capable of designing and producing the excellent systems which are the foundation upon which we have built our success.

### The Rewards

Salaries are highly competitive as you would expect from a leading software house. The company actively encourages career development and provides an exciting range of opportunities for people who can accept a challenge. Our new Oxford offices provide first class working conditions and our development hardware which complies ICL ME26, 2966 and IBM 4331 ensures the right resources for producing software to schedule.

### The Next Step

It is to telephone or write to:  
Terry Kirk  
Telecomputing plc  
244 Berns Road  
Oxford OX4 3RW  
(0865) 777755

### The Requirements

**Software Designers:** we need people capable of making an original contribution to the design of our new products. Previous experience of software design is desirable but not essential. Knowledge of any of the following areas would be relevant: Applications generators, relational databases, IKBS, MM, OSS.

**Development Programmers:** we require career programmers, preferably with experience of assembler level programming, but if not good experience of a BCPL like language (C, PASCAL, S3) is essential. Based in Oxford the jobs are in a team where all individuals must be able to solve problems and program their solutions.

**Consultant/Analyst Programmers:** Based in Oxford or London we require people with experience in On-line systems with a mainframe COBOL programming background (ideally IBM or ICL) who are capable of designing and leading a team to produce innovative systems to commercial timescales.

**Programmers:** Based in Oxford or London these people must have at least two years' IBM or ICL COBOL experience preferably in an on-line environment. Much of our work is carried out on clients' sites so a willingness to work away from home is essential.

### STOP PRESS

**Trainee Programmers:** Must have had some experience of COBOL programming. Based in our Manchester office, preference will be given to local applicants who will not object to long periods working on client sites away from home.

Telecomputing

## SOFTWARE EVALUATION & HARDWARE PROCUREMENT Have you the talent to command £14,500 p.a.

British Telecom are now in the market for a number of essential talents to work in London. We are looking for a heavyweight Software Analyst together with a support team of ICL 2900 experts plus other professionals with specific experience of datacom systems assessment. All will play a vital, pivotal role — analysing, recommending, ordering and installing hardware and software. When we reveal that a typical project involves 100 different sites, you get some dimension of the size, scope and sheer technical challenge of this assignment.

### Take a closer look... SENIOR SOFTWARE AND HARDWARE ASSESSOR

An expert in programming (essentially COBOL) who also possesses a wealth of IBM and ICL mainframe experience. A genuine, hard-nosed professional who can assess software performance and hardware specifications against stringent BT benchmarks. A true manager who can confidently liaise with manufacturers and users alike. Above all, an agile intellect who can weigh up the merits of every potential product and then make mature, incisive judgements.

If you have the essential experience and technical reporting skills we're offering up to £14,500 now... and prospects of considerably more.

### HARDWARE & DATACOM ANALYST

Slightly younger professionals — in their early to mid twenties range — with surprisingly mature manners. People with a genuine fascination for computers and powerful grip on all the latest hardware developments. We

are particularly interested in meeting people with two very specific areas of experience. Some will have a detailed knowledge of ICL 2900's, others will specialise in network design, Modem, Multiplexer and datacom systems procurement.

If you have the right technical and reporting talents, the salary could be up to £12,000.

### Find out more!

Ring us now and meet BT's Hardware and Software Evaluation team in Central London next week. We're looking into....

THE CAFE ROYAL  
68 REGENT STREET  
London W1  
Fifth Floor  
George Suite

Between 5.30 and 8.30 pm

So make a date... put yourself in line for a £14.5K salary!

Call Michelle Priestley, right away on Freephone 2593 or direct on 01-432 9357 quoting reference CW

If you really can't make this date and would still like to put yourself in the running, ring us today for further details.

**Data Processing Executive**

## Analysts/Senior Analysts Salaries to £12,000

We are a highly successful organisation, with substantial reserves and able to demonstrate considerable growth within our industry.

An integral part of our success to date is due to the effective use of computer technology throughout the Organisation and a firm financial commitment to expand this activity which will include the introduction of the latest sophisticated systems to further improve our efficiency.

### Senior Systems Analysts £12,000

You will have total responsibility for a team of Analysts engaged in the development of systems for a specific user area combined with day to day supervision of a number of projects.

You should have successfully completed a course in the development, from inception to implementation, have recent project management experience combined with the professional interpersonal skills necessary to liaise at all levels within an Organisation.

You should have a minimum five years experience in a similar position within a commercial mainframe environment and experience of using a minimum of two languages should be a distinct advantage.

### Systems Analysts £11,000

Working within a structured environment and under the supervision of a Senior Analyst, you will be responsible for the development of systems for a specific user area.

You should have a minimum three years experience in a similar position within a commercial mainframe environment and experience of using a minimum of two languages should be a distinct advantage.

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West  
Midlands



# Would you like to join a Winning Team?

**Top Salaries — Top Sales Commissions — Top Systems & Programming Salaries**

**Pick the Job For You — Up to £50,000!!!!**

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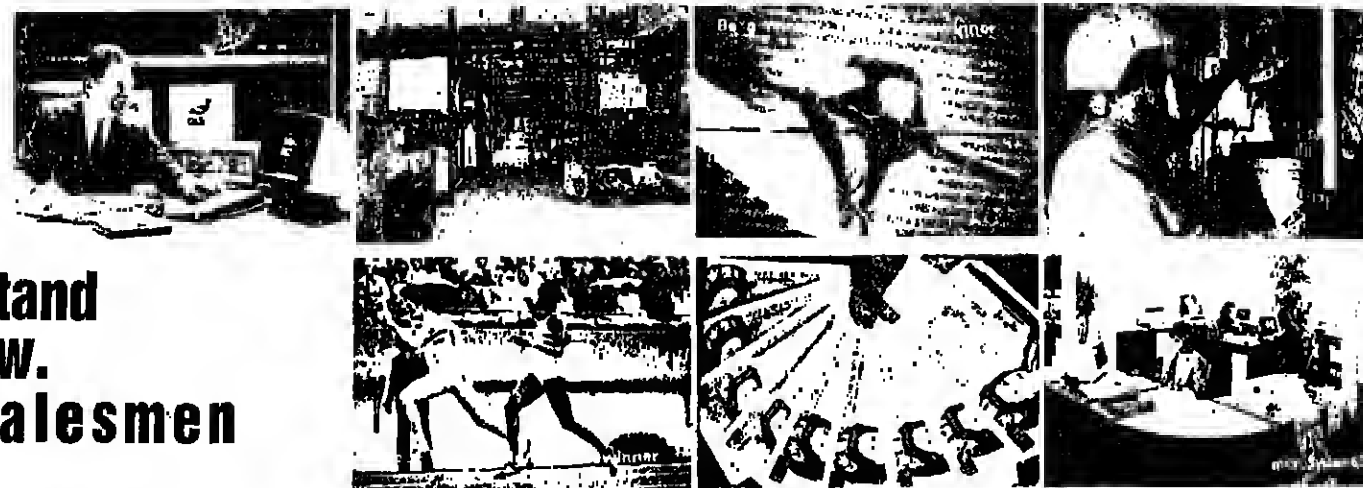
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**Sales Managers & Salesmen to £50,000 pa.**

**Project Leaders and Managers to £14,000 pa.**

**Analyst Programmers to £10,000 plus early promotion.**

**Our clients include Manufacturers — Distributors, Stockists, Oil Companies, Vehicle Leasing etc, etc, etc.**



## SALES MANAGERS AND SALESMEN

**— UP TO £50,000 EARNINGS CAPABILITY**

We are inundated with top quality leads and serious business opportunities. As such, we urgently seek a number of experienced Business Systems salesmen, with a proven, demonstrable track record of closing business, to join our rapidly expanding company as a Public company subsidiary.

Tradewinner offer a wide variety of Package and Custom built software running under Honeywell and ICL equipment. Negotiations are also in progress with a number of leading micro manufacturers. We seek candidates with the ability to produce demonstrable, undertake initial feasibility studies, prepare a high quality tender, supported by a first class Systems Design team, and present an effective business case at Board level.

Excellent graphics aids are available. Equally, a first class reference base is already established throughout the entire UK. We are flooded with sales enquiries and actively market to provide top business opportunities for our companies. Outstanding opportunities exist for all categories of proven sales staff with early Board prospects for senior top performers. Equally, for developing salesmen, with the professionalism and commitment, opportunities to triple your earnings are uniquely available via Tradewinner. Either apply immediately for Birmingham interview, or visit us on the stand at the Which Computer? Show. If you've got the ability, we've got the quality of leads you've never seen before. At present we've got Project Managers along up to £50,000 worth of business p.a. so what could you, as a 'Professional Salesman', sign up. Sell Honeywell, ICL and other manufacturers Turnkey products. Contact John Wood or Bob Tait for early interview.

## MANAGERS — SALES SUPPORT

**£12,500 plus car & bonus**

Have you worked with software products?  
Do you know your products technically?  
Have you had experience in the following:

Sales Order Processing  
Stock Control  
Purchase Order Processing  
Ledgers  
Payroll  
Vehicle Leasing?

Have you worked in the computing industry for at least seven years, in at least two different environments?  
Have you used Honeywell or ICL equipment?  
Do you want to work with a successful company?  
Do you want to create further success?  
Do you want to satisfy clients' business needs?  
Do you want to lead others?  
Do you want to work with clients and potential clients?  
Do you want to be in control of your own rewards?  
Do you want a company car?  
Do you want to be ahead of the competition?

If you can answer YES to most of these questions, then we would like to meet you — SOON! Contact us — NOW. John Wood or Bob Tait.

## ANALYST/PROGRAMMERS

**£6,000 to £10,000**

Have you had at least three years' programming experience?  
Have you had COBOL experience?  
Do you know about Sales Order Processing?

Stock Control  
Purchase Order Processing  
Ledgers

Have you used Honeywell or ICL equipment?

Are you eager to develop new skills?

Do you want to broaden your horizon?

Do you want technical challenges?

Do you want contact with your clients?

Can you meet your own committed timescales?

Do you enjoy working in a professional environment?

Do you want the rewards that you think you deserve?

If you have answered YES to most of these questions, then we have got a lot to offer each other. Contact us, NOW.

Bob Tait or Jeff Forrester

## MANAGERS IMPLEMENTATION

**£12,000 upwards plus car**

Have you had at least seven years' experience in the computing industry?  
Have you had experience in the following:

Sales Order Processing  
Stock Control  
Purchase Order Processing  
Ledgers

Payroll  
Vehicle Leasing?

Have you used Honeywell or ICL equipment?

Have you had COBOL programming experience, system analysis, and design experience?

Have you worked with software products before?

Do you enjoy solving problems?

Do you think that computer systems are tools to be used to satisfy business needs?

Do you want to do feasibility studies for clients?

Do you think that ongoing support for a client is important?

Do you want to take an important role in satisfying current client needs, and in generating future business?

Do you want to lead others?

Do you want to receive the rewards that you think you deserve?

Do you want a company car?

Do you want a secure future?

If you have answered YES to most of these questions, we ought to be talking to each other. Contact us — NOW.

Bob Tait or Geoff Caine

## PROJECT LEADERS/MANAGERS

**10K to 14K Car at Senior Level**

We are seeking experienced Systems Designers/Investigators capable of undertaking an extensive number of feasibility studies in a pre-sales support role, through to Analysing and Ordering Systems, right through to team control in a development role and Systems Implementation at client sites.

A considerable number of packages are already used so ability to rapidly understand the features and facilities of the varying systems ranging from Order Processing, through Stock Control into BOMP, Purchasing, Ledgers, etc. would be a distinct advantage. An understanding of Cobol is mandatory, as is some demonstrable career experience of having spent at least two years programming.

Ability to communicate professionally with users is very important. Equally so, the ability to project plan and to work within committed time scales. We in turn offer attractive working conditions, good salaries, excellent career progression opportunities, and the opportunities of share investment in our own Public Group.

All candidates must be resident or prepared to become resident within the Midlands, working from our Central Birmingham base at the Aston Science Park. Excellent positions. Excellent careers but with preference for the top 20% of the industry in capability, initiative and motivation. If you feel you have the ability, but would like the scope to develop, call Tradewinner, or visit us at the Which Computer? Show, January 17th-20th.

For interview at our Data Centre call Bob Tait or Geoff Caine.

## SALES MANAGER

**TERMINAL PRODUCTS — UK COVERAGE —**

**MIDLANDS BASED**

**ATTRACTIVE PACKAGE + COMMISSION**

We seek an experienced Video Terminal Sales Executive capable of assisting in the development of a new venture as a Group subsidiary. We have an exciting product generating considerable interest, especially in the 132 character screen capability. We need a senior Sales Executive with a sound knowledge of protocols, able to assist and advise our American partner company, and able to assist with Datacube International. We have a very large potential customer base to penetrate and enquiries already for over 1,000 units see a target market with our ultimate UK market alone of over 5,000 units.

We have the product, with top company account interest already generated from over 40 sites with 6 test sites installed and working. A knowledge of Honeywell and ICL protocols could be advantageous but not essential. The ability to sell direct to interested clients, negotiate and tender to large accounts, and to build a small, top quality sales team, will be essential to gain this position. A serious later Directorship opportunity exists in a Public company subsidiary, and a chance of participation in equity with attractive low tax benefits exists for a top level Sales Manager with the experience and initiative to make a viable contribution. A competitive salary and usual business expenses will be provided. We seek an early start to close immediately available business opportunities. Some European travel will be involved, but very small. A Midlands home commitment is essential as an important Head Office Group member. An excellent opportunity for an experienced Terminal Systems Sales Manager to secure a top level reward and ground floor career opportunity.

Telephone Bob Tait for discussion and interview details.

## Analysts, Progs. & Comms Specialists

**Saudi Arabia — Various Locations**

**£17 to £30K**

Morried status and school fees available with some posts for people with 3 to 7 years experience of large IBM mainframes. BANKING, SCIENTIFIC/CONSTRUCTION, COMMERCIAL. Recent involvement with PL-1 TSO/SPF JCL IMS DB/DC Fortran IV MVS/JES 2 would be of interest. We also have vacancies for Perkin Elmer 3200 and HP3000 Programmers and Analysts. Ref. 1901/A

## Real Time Applications

**Surrey Border**

**up to £17K**

This systems house is seeking computer professionals capable of responding to a variety of technical challenges. Ambitious Analysts/Programmers with a degree and three years' experience of defence, information or industrial real-time applications would be of great interest. Familiarity with Assembler or real-time/mathematical languages is desirable. Ref. 1901/B

## Product Support Specialists for Micra Systems

**Thames Valley & WC1**

**£12K+**

New Products coming from Established Companies seeking experience of IBM PC or Sirius type systems to support their growing Dealer and large OEM customer base. New positions in expanding organisations with great potential for ambitious applicants. Ref. 1901/C

## Electronics Engineers

**Surrey**

**Up to £13.5K**

Vacancies exist for candidates with a qualification in electronics and at least two years' software development experience to work on complex defence systems. Microprocessor and CORAL or PASCAL experience advantageous. Excellent benefits and relocation offered. Ref. 1901/D

## Sales Executives

**WC1 & Thames Valley**

**£10K base, £25K OTE + Car**

Dealer and OEM Sales experience needed with Micro Business Systems or similar products. Emphasis is on knowledge of Dealership networks, including selection and appraisal, in the Midlands and South. Ref. 1901/E

## Finance Consultants/Project Leaders

**Surrey Border/London**

**£14-£18K**

If you have sound experience of IBM, DEC or Tandem hardware gained within a banking and/or money market and commodity trading environment, this is an excellent opportunity to make that first move to a top consultancy, or a move to a better one. An out-going personality, coupled with a flexible attitude, is essential. Ref. 1901/F

## Maths/Defence Systems

**Central and West London**

**£14K**

Mathematicians are needed with skills in modelling, simulation, operational analysis or Artificial Intelligence. Defence Project leader experience or capability is required. Both our clients offer excellent career opportunities and relocation if appropriate. Ref. 1901/G

## Analyst Programmers

**London/Overseas**

**Up to £12.5K**

Systems house with world wide client base needs Hewlett Packard experts to work on bespoke versions of complex order processing software. Specification and implementation can be overseas — development in London. A minimum of 3 years experience, or at least two on HP3000 is needed for these positions. Ref. 1901/H

## Micra S/W Development

**Herts**

**£10K + Car**

A vacancy exists for an Assembler programmer with a minimum of two years experience to join a software house developing microprocessor based POS products. Well-proven software design skills together with the ability to communicate at all levels is essential. Ref. 1901/J

## Systems Designers (S'ware & H'ware)

**London, Swindon & Maidenhead**

**£12-£15K**

We are looking for candidates with knowledge of Operating Systems including CPM, MP/M, UNIX and relevant Assembler and high level languages plus LANs. Experience of market requirements, new product design, office technology and communications. Project Leader potential required. Ref. 1901/K



Isobel Bruce or David Fletcher 01-405 1006 or write quoting advertisement reference number, 16 Red Lion Square London WC1R 4QS

Recruitment consultants License No. SE 8783

# Computer Professionals

## Communications/Electronic Warfare

**Berks and Herts**

**£11-£17K**

Electronics and/or programming skills with, for some candidates, project leading experience, are needed for both civil and military systems work. Multi micro configurations are used for one system which involves Data Communications. Design of distributed databases and Carol programming background would also be relevant. Degree level candidates should be capable of technical innovation. Ref. 1901/L

## Database Consultants

**Central London**

**£15-£20K**

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## Banking Systems

**London/Herts Border**

**c£17K**

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(7342)

# Communications Technologists

**Central London or Harlow (Essex)**

British Petroleum's Telecommunications Division is responsible for the implementation and operation of national and international communications systems and networks incorporating data, voice, image and message technologies. Our London and Harlow computing centres are looking for communications technologists to implement and support a complex, state-of-the-art, packet switching network as well as more conventional communications.

Applicants, preferably in their twenties, must have either an HNC/HND in telecommunications or City and Guilds full technical qualifications or the equivalent, together with 4-6 years' telecommunications experience.

We offer a competitive salary supported by a substantial range of benefits including non-contributory pension scheme, subsidised luncheon club and first-class sporting/leisure facilities.

Please write or telephone for an application form to:

**Mrs J. E. S. Wilkerson,  
Recruitment and Placement Branch,  
The British Petroleum Company plc,  
Britannic House, Moor Lane, London EC2Y 9BU.  
Tel: 01-920 3484**



**The British Petroleum Company p.l.c.**

## The IBM SYSTEM34/36/38 Recruitment Specialists

## SNR

## ANALYST PROGRAMMER/DPM

**for a new**

## IBM SYS/36 site in Cambridge

**c£14,000 + benefits**

**+ very generous relocation expenses where appropriate**

MY CLIENT: Is an International Company providing a range of services to the petroleum industry to aid in the drilling, completion and production of oil-wells. Part of a multi-national organisation, their expertise is used in over 75 countries to locate and produce oil on and off-shore. A Research centre is now being established in Cambridge including a new IBM SYS/36 installation.

THE VACANCY: Needs the talents of a multi-disciplined professional who would like to use their ability in developing financial and accounting systems. The successful applicant will be responsible for the day to day running of the installation within a high level research team environment. The position requires total dedication, versatility and is an exceptional opportunity to the career professional.

THE PROSPECTS: Within the group both short term and long term are excellent with very good promotional prospects. Every chance will be given to develop your technical skills enabling you to advance your career.

TO APPLY: Please call Richard Millsom on 01-354 1055 during office hours or on 01-958 2553 during evenings and weekends. Response will be treated with strict confidence.

**MARCH 1 NOEL ROAD, LONDON N1 8HQ**  
**COMPUTER 01-354 1055**  
**RECRUITMENT LTD**

Please write enclosing details to: John Wood or Bob Tait

**TRADEWINNER SYSTEMS LIMITED**  
Aston Science Park, Love Lane, Birmingham B7 4BJ. Or telephone 021-359 0854

(720)



## Team Leaders • Senior Engineers • Electronics Engineers & Real-Time Software Specialists

# Our investment in communications will...

Make 1984 the year you joined one of our small teams of multi-disciplined Engineers at New Southgate. There you'll be working in a stimulating environment alongside highly skilled professionals with a mission to take up the challenge of tomorrow's communications systems and expand our business in the highly competitive UK and overseas markets.

We are currently involved in several of the most interesting telecommunications projects of the future which must inevitably evolve into fully integrated information delivery systems optimised for both voice and data. Among

these STC's new digital telephone switching system, already of proven international performance, is now undergoing extensive UK software design, development and adaptive engineering.

While the course of the Information Revolution can be defined in broad contours, it cannot be predicted in detail. Whatever predictions are made today are bound to be overtaken by accelerating technology and shifting demand. What is predictable however, is the need for a number of key men and women to join us in a variety of functions:

## ...take your career into the 21st century now...

### SYSTEMS DESIGN

Team Leaders — Systems Engineers

### SYSTEM DEVELOPMENT SUPPORT

Team Leaders — Software Designers — Programmers — VAX/IBM Software Support Tools Development

### SOFTWARE SYSTEM INTEGRATION

Team Leaders — Database Administrators — Software System Builders

### MICROPROCESSOR APPLICATIONS

Analogue/Digital Interface Designers (Intel 8086)

### EXPERT SYSTEM DESIGN

Section Head — Knowledge Engineers

### ADVANCED TEST DEVELOPMENT

Senior Engineers — Hardware/Software

In all cases, we are looking for ambitious and committed Engineers who are qualified to Degree level or equivalent and can add to the depth of experience within our existing professional teams.

This is your opportunity to make a major contribution to projects capable of transforming the field of voice and data communications. In consequence, we are offering salary packages designed to attract the best people. Generous assistance with relocation expenses is available as appropriate.

## ...Switch to STC.

Take the most important step in your career by telephoning us on 01-368 1234 and asking for Vaughan Hartridge on ext. 2215 or Roger Edmonds-Brown on ext. 2579.

Alternatively, phone Vaughan Hartridge on St. Albans (0727) 60043 or Roger Edmonds-Brown on 01-361 2931 on any weekday evening (between 8-10pm) or Saturday or Sunday morning. If you prefer, write with full details of your experience to: Vaughan Hartridge, The Recruitment Centre, STC Telecommunications Limited, Oakleigh Road South, New Southgate, London N11 1HB.

## Software Designers Analyst/Programmers & Programmers for our Software Development Team and Online Project Teams

### The Company

Telecomputing has, over the last ten years, established an enviable reputation as a leading independent software house. Our main product, TPS, is used at 450 installations around the world. TPS provides a complete transaction processing environment which is unique in the facilities and portability it offers to its users.

Another very important part of the Telecomputing operation is our Client Services division. This provides consultancy, design and programming services to our customer base. We specialise in turnkey projects providing first class systems on time and on cost.

Telecomputing is now recruiting more people to help us achieve our exciting objectives. We need designers and software programmers to give us the extra capacity to produce the software products that are needed to overcome the applications backlog and allow our users to realise the full potential of their hardware.

Our client services team is experiencing unprecedented demand for its resources, so we need more people capable of designing and producing the excellent systems which are the foundation upon which we have built our success.

### The Rewards

Salaries are highly competitive as you would expect from a leading software house.

The company actively encourages career development and provides an exciting range of opportunities for people who can accept a challenge. Our new Oxford offices provide first class working conditions and our development hardware which comprises ICL ME29, 2865 and IBM 4331 ensures the right resources for producing software to schedule.

### The Next Step

is to telephone or write to:

Terry Kirk  
Telecomputing plc  
244 Barnes Road  
Oxford OX4 3RW  
(0865) 777755

### The Requirements

**Software Designers:** we need people capable of making an original contribution to the design of our new products. Previous experience of software design is desirable but not essential. Knowledge of any of the following areas would be relevant: Application generators, relational databases, IKAS, KIMI, OSS.

**Development Programmers:** we require career programmers, preferably with experience of assembler level programming, but if not good experience of a BCPL like language (C, PASCAL, S3) is essential. Based in Oxford the jobs are in a team where all individuals must be able to solve problems and program their solutions.

**Consultants/Analyst/Programmers:** Based in Oxford or London we require people with experience in on-line systems with a mainframe COBOL programming background (ideally IBM or ICL) who are capable of designing and leading a team to produce innovative systems to commercial timescales.

**Programmers:** Based in Oxford or London these people must have at least two years' IBM or ICL COBOL experience preferably in an on-line environment. Much of our work is carried out on clients' sites so a willingness to work away from home is essential.

### STOP PRESS

**Trainee Programmers:** Must have had some experience of COBOL programming. Based in our Manchester office, preference will be given to local applicants who will not be subject to long periods working on client sites away from home.

Telecomputing

## SOFTWARE EVALUATION & HARDWARE PROCUREMENT Have you the talent to command £14,500 p.a.

British Telecom are now in the market for a number of essential talents to work in London. We are looking for a heavyweight Software Analyst together with a support team of ICL 2900 experts plus other professionals with specific experience of datacom systems assessment. All will play a vital, pivotal role — analysing, recommending, ordering and installing hardware and software. When we reveal that a typical project involves 100 different sites, you get some dimension of the size, scope and sheer technical challenge of this assignment.

### Take a closer look... SENIOR SOFTWARE AND HARDWARE ASSESSOR

An expert in programming (essentially COBOL) who also possesses a wealth of IBM and ICL mainframe experience. A genuine, hard-nosed professional who can assess software performance and hardware specifications against stringent BT benchmarks. A true manager who can confidently liaise with manufacturers and users alike. Above all, an agile intellect who can weigh up the merits of every potential product and then make mature, incisive judgements.

If you have the essential experience and technical reporting skills we're offering up to £14,500 now... and prospects of considerably more.

### HARDWARE & DATACOM ANALYST

Slightly younger professionals — in their early to mid twenties range — with surprisingly mature manners. People with a genuine fascination for computers and powerful grip on all the latest hardware developments. We

are particularly interested in meeting people with two very specific areas of experience. Some will have a detailed knowledge of ICL 2900's, others will specialise in network design, Modem, Multiplexer and datacom systems procurement.

If you have the right technical and reporting talents, the salary could be up to £12,000.

**Find out who you are!**  
Ring us now and meet BT's Hardware and Software Evaluation team in Central London next week. We're hooking into...

THE CAFÉ ROYAL  
68 REGENT STREET  
London W1  
Fifth Floor  
George Suite

Between 5.30 and 8.30 pm

So make a date...  
put yourself in line for a £14.5K salary!

Call Michelle Priestley, right away on  
Freelone 2593 or direct on 01-432 9357  
quoting reference CW

If you really can't make this date and would still like to put yourself in the running, ring us today for further details.

**T Data Processing  
Executive** British Telecom

## Analysts/Senior Analysts Salaries to £12,000

We are a highly successful organisation, with substantial reserves and able to demonstrate considerable growth within our industry. An integral part of our success to date is due to the effective use of computer technology throughout the organisation and a firm financial commitment to expand this activity which will include the introduction of the latest sophisticated systems to further improve our efficiency.

### Senior Systems Analyst c £12,000

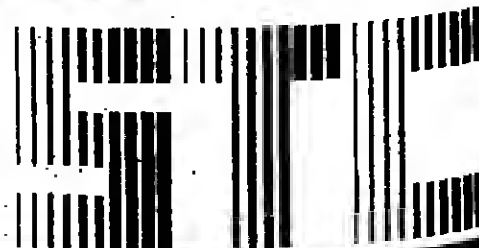
You will have total responsibility for a team of Analysts engaged in the development of systems for a specific user area combined with day-to-day supervision and control of projects. You should have successfully completed at least one major system from inception to implementation, have recent professional experience combined with the professional interpersonal skills necessary to liaise at all levels within an organisation. It would be an advantage if you have a commercial background and a minimum of five years' experience. The salary offered will be a commercial rate commensurate with your experience and qualifications.

### Systems Analyst c £11,000

Working within a professional environment with substantial reserves and able to demonstrate considerable growth within our industry. You will have a professional background in the development of systems for a specific user area combined with day-to-day supervision and control of projects. You should have successfully completed at least one major system from inception to implementation, have recent professional experience combined with the professional interpersonal skills necessary to liaise at all levels within an organisation. It would be an advantage if you have a commercial background and a minimum of five years' experience. The salary offered will be a commercial rate commensurate with your experience and qualifications.

West  
Midlands

Developing tomorrow's communications technology  
**STC TELECOMMUNICATIONS**



STC 1001/1049



# Would you like to join a Winning Team?

**Top Salaries — Top Sales Commissions — Top Systems & Programming Salaries**

**Pick the Job For You — Up to £50,000!!!!**

## Honeywell & ICL clients

**The best Minis in the UK.  
Top New Micros.**

**Customer enquiries  
unrivalled anywhere.**

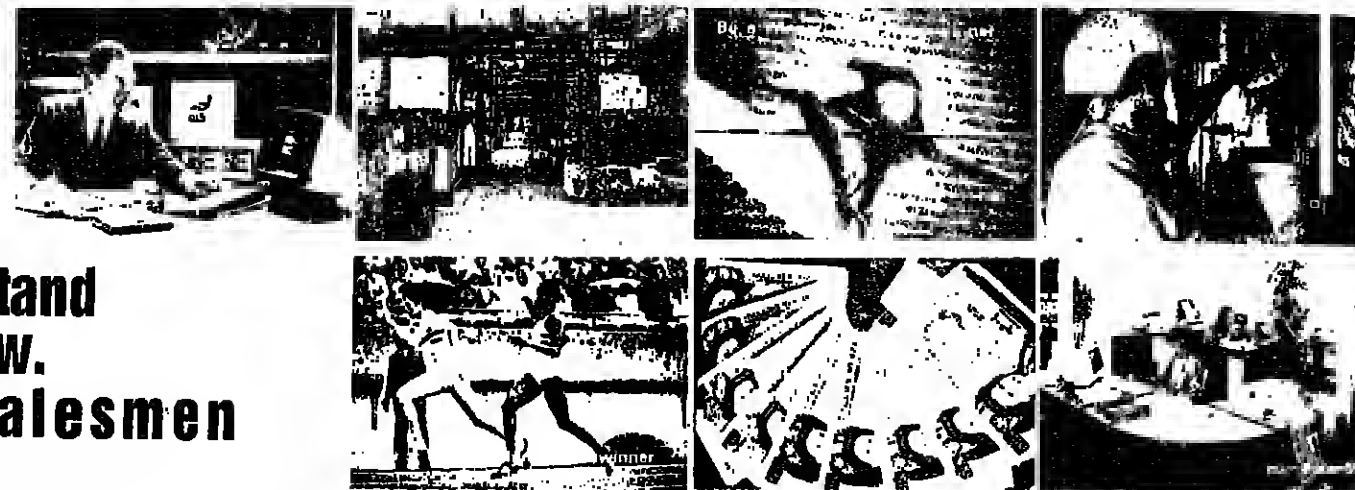
**The Top System Builder Stand  
at Which Computer? Show.**

**Sales Managers & Salesmen  
to £50,000 pa.**

**Project Leaders and Managers  
to £14,000 pa.**

**Analyst Programmers to £10,000 plus  
early promotion.**

**Our clients include Manufacturers — Distributors, Stockists, Oil Companies,  
Vehicle Leasing etc, etc, etc.**



## SALES MANAGERS AND SALESMEN — UP TO £50,000 EARNINGS CAPABILITY

We are inundated with top quality leads and serious business opportunities. As such, we urgently seek a number of experienced Business Systems salesmen, with a proven, demonstrable track record of closing business, to join our rapidly expanding company as a Public company subsidiary.

Tradewinner offer a wide variety of Package and Custom built software running under Honeywell and ICL equipment. Negotiations are also in progress with a number of leading micro manufacturers. We seek candidates with the ability to produce demonstrable, undertake initial feasibility studies, prepare a high quality tender, supported by a first class Systems Design team, and present an effective business case at Board level.

Excellent graphics are available. Equally, a first class reference base is already established throughout the entire UK. We are flooded with sales enquiries and actively market to provide top business opportunities for our companies. Outstanding opportunities exist for all categories of proven sales staff with early Board prospects for senior top performers. Equally, for developing salesmen, with the professional and commitment, opportunities to triple your earnings are uniquely available via Tradewinner. Either apply immediately for Birmingham interview, or visit us on the stand at the Which Computer? Show. If you've got the ability, we've got the quality of leads you've never seen before. At present we've got Project Managers sitting up to £250,000 worth of business p.a. so what could you, as a 'Professional Salesman', sign up. Sell Honeywell, ICL and other manufacturers Turnkey products. Contact John Wood or Bob Tait for early interview.

## MANAGERS — SALES SUPPORT £12,500 plus car & bonus

Have you worked with software products?  
Do you know your products technically?  
Have you had experience in the following:

Sales Order Processing  
Stock Control  
Purchase Order Processing  
Ledgers  
Payroll  
Vehicle Leasing?

Have you worked in the computer industry for at least seven years, in at least two different environments?  
Have you used Honeywell or ICL equipment?  
Do you want to work with a successful company?  
Do you want to create further success?  
Do you want to satisfy clients' business needs?  
Do you want to lead others?  
Do you want to work with clients and potential clients?  
Do you want to be in control of your own rewards?  
Do you want a company car?  
Do you want to take ahead of the competition?

If you can answer YES to most of these questions, then we would like to meet you — SOON! Contact us — NOW, John Wood or Bob Tait.

## ANALYST/PROGRAMMERS £6,000 to £10,000

Have you had at least three years' programming experience?  
Have you had COBOL experience?  
Do you know about Sales Order Processing?

Purchase Order Processing  
Stock Control  
Purchase Order Processing Ledgers?

Are you eager to develop new skills?  
Do you want to broaden your horizons?  
Do you want technical challenges?  
Do you want contact with your clients?

Can you meet your own committed timescales?  
Do you enjoy working in a professional environment?  
Do you want the rewards that you think you deserve?

If you have answered YES to most of these questions, then we have got a lot to offer each other. Contact us, NOW, Bob Tait or Jeff Forrester.

## MANAGERS IMPLEMENTATION £12,000 upwards plus car

Have you had at least seven years' experience in the computer industry?  
Have you had experience in the following:

Sales Order Processing  
Stock Control  
Purchase Order Processing  
Ledgers  
Payroll  
Vehicle Leasing?

Have you used Honeywell or ICL equipment?  
Have you had COBOL programming experience, system analysis, and design experience?  
Have you worked with software products before?

Do you enjoy solving problems?  
Do you enjoy working with clients?  
Do you think that computer systems are tools to be used to satisfy business needs?  
Do you want to do feasibility studies for clients?  
Do you think that ongoing support for a client is important?  
Do you want to take on important roles in satisfying current client needs, and in generating future business?  
Do you want to lead others?  
Do you want to take the rewards that you think you deserve?  
Do you want a company car?  
Do you want a secure future?

If you have answered YES to most of these questions, we ought to be talking to each other. Contact us — NOW, Bob Tait or Geoff Cairns.

## PROJECT LEADERS/MANAGERS 10K to 14K Car at Senior Level

We are seeking experienced Systems Designers/Implementers capable of undertaking an extensive number of feasibility studies in a project support role, through to Analysis and Designing Systems, right through to team control in a development role and Systems Implementation at client sites.

A considerable number of packages are already used so ability to rapidly understand the features and facilities of the varying systems ranging from Order Processing, through Stock Control into BOMs, Purchasing, Ledgers, etc. would be a distinct advantage. An understanding of Cobol is mandatory, as is some demonstrable career experience of having spent at least two years programming.

Ability to communicate professionally with users is very important. Equally so, the ability to project plan and to work within committed time scales. We in turn offer attractive working conditions, good salaries, excellent career progression opportunities, and the opportunities of where investment in our own Public Group.

All candidates must be resident or prepared to become resident within the Midlands, working from our Central Birmingham base at the Aston Science Park. Excellent positions. Excellent careers but with preference for the top 20% of the industry in capability, initiative and motivation. If you feel you have the ability, but would like the scope to develop, call Tradewinner, or visit us at the Which Computer? Show, January 17th-20th.

For interview at our Data Centre call Bob Tait or Geoff Cairns.

## SALES MANAGER TERMINAL PRODUCTS — UK COVERAGE — MIDLANDS BASED ATTRACTIVE PACKAGE + COMMISSION

We seek an experienced Video Terminal Sales Executive capable of assisting in the development of a new venture as a Group subsidiary. We have an exciting product generating considerable interest, especially in the 102 character screen capability. We need a senior Sales Executive with a sound knowledge of protocols, able to assist and advise our American partner company, and able to assist with DataScope interpretations. We have a very large potential customer base to penetrate and enquiries already for over 100 units. We are a target market with our ultimate UK market alone of over 5,000 units.

We have the product, with top company account interest already generated from over 40 sites with 6 test sites installed and working. A knowledge of Honeywell and ICL protocols could be advantageous but not essential. The ability to sell direct to interested clients, negotiate and tender to large accounts, and to build a small, top quality sales team, will be essential to gain this position. A serious later Directorship opportunity exists in a Public company subsidiary, and a chance of participation in equity with attractive low tax benefits exists for a top level Sales Manager with the experience and initiative to make a viable contribution. A company car, attractive salary and usual business expenses will be provided. We seek an early start to close immediately available business opportunities. Some European travel will be involved, but very small. A Midlands home commitment is essential as an important Head Office Group member. An excellent opportunity for an experienced Terminal Systems Sales Manager to occur a top level reward and ground floor career opportunity. Telephone Bob Tait for discussion and interview data.

## Analysts, Progs. & Camms Specialists Saudi Arabia — Various Locations

£17 to £30K

Married status and school fees available with some posts for people with 3 to 7 years experience of large IBM mainframes. BANKING, SCIENTIFIC/CONSTRUCTION, COMMERCIAL. Recent involvement with PL.1 TSO/SPF JCL IMS DB/DC Fortran IV MVS/JES 2 would be of interest. We also have vacancies for Perlkin Elmer 3200 and HP3000 Programmers and Analysts. Ref. 1901/A

## Real Time Applications

Surrey Border

up to £17K

This systems house is seeking computer professionals capable of responding to a variety of technical challenges. Ambitious Analyst/Programmers with a degree and three years' experience of defence, information or industrial real-time applications would be of great interest. Familiarity with Assembler or real-time/mathematical languages is desirable. Ref. 1901/B

## Product Support Specialists

for Micro Systems

Thames Valley & WC1

£12K+

New Products coming from Established Companies seeking experience of IBM PC or Sirius type systems to support their growing Dealer and large OEM customer base. New positions in expanding organisations with great potential for ambitious applicants. Ref. 1901/C

## Electronics Engineers

Surrey

Up to £13.5K

Vacancies exist for candidates with a qualification in electronics and of at least two years' software development experience to work on complex defence systems. Microprocessor and CORAL or PASCAL experience advantageous. Excellent benefits and relocation offered. Ref. 1901/D

## Sales Executives

WC1 & Thames Valley

£10K base, £25K OTE + Car

Dealer and OEM Sales experience needed with Micro Business Systems or similar products. Emphasis is on knowledge of Dealership networks, including selection and appraisal, in the Midlands and South. Ref. 1901/E



Isobel Bruce or David Fletcher 01-405 1006 or write quoting advertisement reference number, 16 Red Lion Square London WC1R 4QS

## Finance Consultants/Project Leaders

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£14-£18K

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Recruitment consultants Licence No. SE 6708

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Applicants, preferably in their twenties, must have either an HNC/HND in telecommunications or City and Guilds full technical qualifications or the equivalent, together with 4-6 years' telecommunications experience.

We offer a competitive salary supported by a substantial range of benefits including non-contributory pension scheme, subsidised luncheon club and first-class sporting/leisure facilities.

Please write or telephone for an application form to:

Mrs J. E. S. Wilkerson,  
Recruitment and Placement Branch,  
The British Petroleum Company plc,  
Britannic House, Moor Lane, London EC2Y 9BU.  
Tel: 01-920 3484

## The IBM SYSTEM 34/36/38 Recruitment Specialists

## SNR

## ANALYST PROGRAMMER/DPM

for a new

## IBM SYS/36 site in Cambridge

£14,000 + benefits

+ very generous relocation expenses where appropriate

MY CLIENT: Is an International Company providing a range of services to the petroleum industry to aid in the drilling, completion and production of oil-wells. Part of a multi-national organisation, their expertise is used in over 75 countries to locate and produce oil on and off-shore. A Research centre is now being established in Cambridge including a new IBM SYS/36 installation.

THE VACANCY: Needs the talents of a multi-disciplined professional who would like to use their ability in developing financial and accounting systems. The successful applicant will be responsible for the day to day running of the installation within a high level research team environment. The position requires total dedication, versatility and is an exceptional opportunity to the career professional.

THE PROSPECTS: Within the group both short term and long term are excellent with very good promotional prospects. Every chance will be given to develop your technical skills enabling you to advance your career.

TO APPLY: Please call Richard Milsum on 01-354 1055 during office hours or on 01-958 2553 during evenings and weekends. Response will be treated with strict confidence.

**MARCH  
COMPUTER  
RECRUITMENT LTD**

1 NOEL ROAD, LONDON N1 8HQ

01-354 1055

**The British Petroleum Company p.l.c.**

**TRADEWINNER SYSTEMS LIMITED**

Aston Science Park, Love Lane, Birmingham B7 4BJ. Or telephone 021-359 0854

173021



## SYSTEMS ANALYSTS C. LONDON

To £13,000

This well known company is undergoing considerable expansion of its DP department and requires Analysts at various levels of experience. A minimum of one year's formal analysis gained in a commercial environment is required. Preference will be given to those with accounting application backgrounds. There will be a good deal of contact with management departments and candidates must therefore be professional in both appearance and attitude.

## SYSTEMS MANAGERS H'WELL L6 + BCL

c.£11,000

Two clients seek good Analyst/Programmers who wish to move into managerial positions. Firstly a company based in N. London is shortly to install a BCL MOLEULAR 18 and requires a person with experience of ASSEMBLER or similar language. Secondly, a firm based in Bucks. with a HONEYWELL L6 seeks a Senior COBOL or SCREENWRITE experience. Applicants should be able to work on their own initiative and preferably have some client/user contact experience.

## PROGRAMMERS MINI COMPUTERS

c.£8,500

A number of clients currently require Programmers with a minimum of a year's experience in COBOL, FORTRAN or PASCAL. This will have been gained on any mini however special interest will be shown in those with knowledge of DEC VAX, PRIME, HP 1000 or GDDUL SEL. Applicants should have a good educational background and be smart and ambitious. Most work will be in C. London with the occasional visit to client sites.

## DEVELOPMENT DEC/COBOL

To £16,000

Continuing growth opens further S&P opportunities with this nationally renowned Middlesbrough based company. Utilising VAX and PDP equipment for their advanced on-line systems development they require Programmers or Analyst/Progs. with two to three years' COBOL preferably gained in a VAX environment. At Team Leader level they seek a Senior Analyst with proven project design through implementation experience and good DEC systems exposure. A comprehensive benefits package is offered, to include bonus, relocation and with many positions a company car.

## ALL LEVELS ICL/VME

To £18,000

An expanding Essex based company, committed to major financial systems development on ICL 2900 VME systems is seeking experienced ICL people at all levels. Progs. and Analyst/Progs. should have 18 months or more COBOL, the latter with some formal analysis. Analysts and above will have at least two years' systems exposure. Excellent salaries and prospects are augmented by a generous benefits package which includes a good bonus scheme.

## PROJECT MANAGERS COMMS/BANKING

To £18,000

Two City-based clients with heavy international commitments require Project Managers in the Banking and Communication areas. They seek in depth experience in either application area with micro experience especially relevant for the Comms. position. Basic salaries will be greatly enhanced by valuable and extensive benefits packages.

## ANALYST/PROGRAMMERS DATABASES

£10,000

A rapidly expanding software house is currently recruiting Analyst/Programmers with a minimum of 18 months DATABASES from a Prime or CMC environment. The client actively encourages employees to service customers in a consultancy role therefore applicants should be presentable, confident and have the ability to deal with first time users. The client can offer job satisfaction, regular salary reviews and intensive training.

## ANALYST/PROGRAMMER RPGII/III

£10,500

An International bank has identified a requirement for an Analyst/Programmer with a solid GSD background. The bank is an established 38 year old but is quite prepared to consider two years' RPGII programming and will retrain to RPGIII. The department is fairly small and everyone is encouraged to have as much user contact as possible. As well as a good starting salary the client will offer a banking package to include a 5% mortgage.

## PROGRAMMERS PL1

To £11,500

A company offering a range of financial services has several requirements for PL1 programmers. The minimum requirement is for 18 months PL1 in a commercial environment for the programming positions and up to four years' plus for the senior posts. Applicants should have good all round programming skills to include design, coding and implementation. Due to the size of the client there is a recognised career path which would lead through to systems if desired.

404 4821



Apex Computer Recruitment Ltd.

London Office: 59 Gays Inn Road, London WC1X 8TL. Tel: 01-404 4821.  
Brussels Office: Rue Gotti de Gomond, 24. Uccle 1180 Brussels. Tel: 010 322 377 4193.

# Communications Consultants

£16,000-£23,000

Berks/Middx

plus car

Plus Relocation

Our client is a growing and very exclusive consultancy specialising in advanced telecommunications and electronic office systems. Their assignments are in both public and private sectors and include the top organisations in finance, oil, electronics, manufacturing, public utilities and Government.

They provide a totally comprehensive service on the full range of Information Technology from strategic studies to installation and their policy of employing only the very best specialists as consultants has secured them a highly prestigious reputation within the industry and amongst their clients.

Headed by one of its best known professionals in computing, the company is securely established financially with a five year development plan which is backed by significant funding and resources, enabling them to pursue their policy of excellence and innovation which has already established them as a leading communications consultancy.

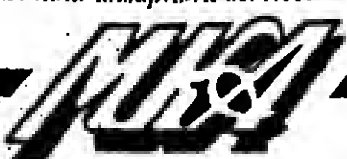
They now seek a small number of top level communications professionals with practical expertise at both technical and project management levels with particular emphasis on PABX systems.

There is an unusual opportunity for the more experienced and senior consultant to develop a business sector which could soon lead to the running of an autonomous subsidiary company within the group.

The company encourages individual responsibility at all levels and the informal structure allows all consultants access to Directors at any time.

Applicants will work in London or the Home Counties with opportunities to participate in European assignments, and must have a strong background in the evaluation and installation of PABX systems.

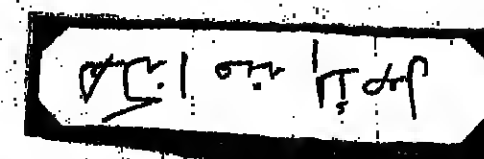
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# LANGTON

Langton Electronic Publishing Systems is an established but fast expanding systems house specialising in information management. As a stable and profitable organisation they cover areas such as text and graphics, demand printing, viewdata, on line retrieval systems, optical and video discs and computer assisted retrieval and delivery systems.

## EXCELLENT BENEFITS PACKAGE

- Company cars with Snr appointments
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- Interest Free season ticket loan
- Flexitime

## TRAINERS to £14,000 + OVERSEAS TRAVEL

As part of their expansion programme Langton require individuals with experience in publishing or software products preferably within an IBM or DEC environment. Reporting to the Training Manager you will be responsible for training customers in a variety of software products. The positions will require travel in Europe and potentially North America therefore foreign languages will be advantageous.

## TECHNICAL SUPPORT ANALYST to £14,000 + OVERSEAS TRAVEL

Duties include installation and support of electronic publishing software products as well as troubleshooting customer sites. There will be some travel in Europe and potentially North America. It is envisaged that opportunities will be created for the right person to eventually move into systems programming. Eighteen months development or support experience in an IBM VM or DEC VAX environment is essential.

## TECHNICAL SUPPORT PROGRAMMER to £14,000

Responsibilities cover enhancing and maintaining software products including on-going software tools environment for text and graphics processing. You should have two years experience in development or maintenance with a liking for thoroughness and the solving of complex problems. An understanding of IBM VM or DEC VAX Fortran is essential.

## CUSTOMER SUPPORT ANALYST to £12,000

These are key positions reporting to the Product Support Manager. Responsibilities include supporting customers using electronic publishing software, pre sales and post sales support, manning of a hot line enquiry service, and setting up and running of demonstrations. Ideally you will have 2 years plus software development or support experience with a knowledge of either IBM or DEC. An understanding of the Xerox 9700 Laser printer or facsimile systems would be an advantage.

For an informal discussion regarding these opportunities please telephone Miles Richards on 01-938 1804 (24 hours) or 01-847 2385 (7pm-9pm).

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# Logitix

Logitix Ltd

10 Grenville Place, London SW7 4RW

Telephone 01-373 3063

## Systems Consultants

London: Salaries to £20k

Having just won a series of major contracts, the Consultancy Division of a large systems and Software House has a number of vacancies for Senior Systems Consultants who will be expected to spearhead their growth during the next few years. All applicants are required to possess at least one degree and have a minimum of five years' computing experience, preferably gained in a large user or systems house environment. Awareness of

development in the fields of office automation and the telecommunications industry is of special interest to our clients, as is a willingness to be involved with marketing activities, including the development of new business. These challenging roles will appeal to ambitious, aggressive individuals who wish to remain at the forefront of technical developments. Ref: L/DA

## PASCAL & UNIX

S.W. London: Salaries to £13k

A highly respected supplier of UNIX-based Microcomputer systems and Accounting Packages wishes to recruit a number of exceptional Applications Programmers and Systems Designers. Applicants, aged 24-32 years must have a minimum of four years' relevant practical experience in a UNIX, CP/M or financial accounting environment. Your programming background must include fluency in two or more of PASCAL, C, Level II COBOL or Business BASIC. Those candidates fully familiar with UK accounting practices and also having a current background in systems design/analysis are especially encouraged to apply. Certain positions will entail a significant degree of client contact in the form of product demonstration seminars and on-site client training, consequently our clients value well-developed interpersonal skills. Ref: L/DB

## FORTRAN Programmers

London: Salaries to £12k

A leading international Systems Company specialising in the development and sale of communications software is seeking Programmers and Designers for its Central London headquarters. Suitable candidates should hold a university degree and have two years' subsequent programming of systems design/development. Fluency in FORTRAN is essential and it is preferable to have had

experience in either a PDP 11/RSX-11M or VAX/VMS configuration. Candidates who are fluent in a foreign language especially French or German will be of particular interest to our client. A degree of mobility is necessary since most positions involve both European and Transatlantic travel. Ref: L/1/C

## CAD/CAM Sales Support

East Midlands: Salaries to £14k

Our clients have recently negotiated an exclusive distribution agreement with a leading U.S. supplier of 12 bit based CAD/CAM systems. The company has an immediate requirement for CAD/CAM Sales Support Personnel primarily to be based in its East Midlands headquarters although a number of positions will shortly be available in London. You must be highly competent in FORTRAN programming with a background

in manufacturing industry. Of particular interest will be those who have post-graduate or U.S. software experience. Since you will be expected to offer in-depth technical support to new users, good interpersonal communication skills and mobility are essential. Our appointment, all employees will receive extensive product training and thereafter an on-the-job basis. Ref: L/1/D

## Comms S/W Development

Sussex Coast: Salaries to £15k

Our client, a major supplier of communications systems, with a well-deserved reputation for innovation, are recruiting a large number of Communications Software Specialists for their development facility, based in the South Downs. They are especially interested in applicants with programming skills in any block structured or assembly language, particularly if they have

developed programs to run on a UNIX-based system. Their current areas of activity include office automation, military command and control and cellular radio systems. Whilst they would be particularly interested in applications from those with experience in any of the above areas, general real-time experience is also very much of interest. Ref: L/1/E

## Real-Time Designers

Herts/Beds: Salaries to £14k

The systems group of a leading computer manufacturer has a number of vacancies for Real-Time Programmers and Designers. All applicants should be educated to BSc standard and have at least 18 months' experience within a real-time scientific minicomputer or microprocessor environment. Programming languages should include fluency in

Assembler and one or more of PASCAL, C, BCPL or CORAL 66. Successful candidates will join project teams involved in the design and development of communications products. Consequently, if you are familiar with X25 protocol techniques, ISD subroutines or local/remote area networks, then you will be of particular interest to our client. Ref: L/1/F

## Industrial Automation

Central London: Salaries to £16k

The Industrial Division of a leading Systems and Software House has recently won a number of major contracts and is therefore seeking additional Programmers and Consultants. Ideally, applicants should be graduates who have at least 12 months' programming experience in a real-time minicomputer environment using PASCAL, FORTRAN or COBOL. Knowledge of DEC VAX or HP/PAK would be an advantage, but is not

essential, since our client will provide in-house training. For the more senior positions, you will be expected to have significant experience in software system design/development leading in the areas of plant control (warehousing, materials handling, process control), distributed control (wide area networks, automated retailing systems, etc.) or software technology (Comms eg X25 and ISO standards). Ref: L/1/G

## Simulation Systems

Thames Valley: Salaries to £13k

A long established Engineering Systems Supplier based in the Thames Valley has an immediate requirement for additional FORTRAN Programmers and Simulation Engineers. You should hold at least one numerate degree and be aged 23-30 years. Whilst the Company's software products are machine portable there is some preference for candidates who have programmed in a PDP/VAX.

Prime, HP or GEC environment. Of greater importance are those who have very recent or current software design and applications programming experience with one or more of: guided weapons and missile control systems, LSI and hybrid circuit design, simulation and modelling of ballistic dynamic systems. Ref: L/1/H 17300

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## TECHNICAL

## LOGSYS

## COMMERCIAL

LOGSYS Advanced Systems provides systems design, programming, and project implementation services to the industrial and scientific and defence community. Most projects are real-time mini or micro computer systems with a relatively large or complex software content. Our services are provided by high calibre software staff, about half of whom work on site at client's premises, whilst the others are based at our research and development centre which is shortly moving into new premises in Wokingham.

As a result of the high demand for our services we now need the following additional staff:-

### VAX SYSTEMS PROGRAMMERS (2) to £14,000

1 position in Portsmouth, 1 in Farnborough, Hants. VMS, FORTRAN, CORAL and MACRO essential. Database experience and RSX an advantage.

### PROGRAMMERS/SOFTWARE ENGINEERS (6) to £13,000

Portsmouth. Design and development of state-of-the-art real-time Defence systems. CORAL essential, MASCOT desirable.

### COMMUNICATIONS SPECIALIST (1) to £14,000

Wokingham. TELETEx, X25, Local Area Network, PASCAL, 16-bit micro and Assembler experience desirable.

The company is continually in the forefront of advanced technology and development, and flexibility and the ability to respond to rapidly changing technology is an important factor in the success of this prestigious operation. Our projects have included interactive graphics, display systems, navigational trainers, simulation and modelling, process control and automation, expert systems, command and control systems and system software.

LOGSYS

To apply for one of these positions or to obtain more information, either telephone, write or send your resumé to Clive Williamson, LOGSYS, 72 Kingsley Road, Northampton NN2 7BL. Telephone 0604 711209, 9 a.m. to 9 p.m. any day including week-ends.

(7100)

LOGSYS Business Systems, an associate company to Logsys Advanced Systems, produces specialist applications programs and packages for commercial users, particularly Insurance and Reinsurance Brokers, and Advertising Agencies. Early in 1984 we shall be moving to brand new offices in Wokingham, which will also house our VAX, PDP11 and WANG computers. We have other offices in London and New York.

As a direct result of the popularity of our business systems we now urgently require the following additional staff:-

### ANALYST/PROGRAMMERS (2) to £12,000

Wokingham based, probably 2 days in London per week. A minimum of 2 years experience in insurance, reinsurance, commercial or financial systems. Previous Hardware is largely irrelevant.

### PROGRAMMERS (3) to £10,000

Wokingham. 2 years commercial experience using either COBOL, BASIC PLUS or BASIC PLUS TWO essential.

Our staff are expected to produce robust and effective systems, on time and to pre-defined standards. Senior staff are required to travel to client sites as necessary, and therefore must be of smart appearance.

\*\*\*\*\*

If you enjoy working in a challenging, changing and growing organisation, where management are responsive, and where you can influence decisions and grow with the Company, then you will enjoy LOGSYS. Working conditions are excellent and there are regular salary reviews and useful fringe benefits.

# Exciting Career Prospects

Because of their continued expansion programmes, our clients have URGENT requirements for the following KEY personnel.

We have many other exciting opportunities for computer staff particularly Programmers and Analysts, and would be very pleased to hear from you if you are considering a career move.

Your first step to pursue these exciting career opportunities, is to telephone ANTHONY HALL, Computer Search & Selection, Hamilton House, Marlowes, Hemel Hempstead, Herts HP1 1BB. Tel: Hemel Hempstead (0442) 40761.

### Technical Support Analyst c.£10,000 + Bonus + car + BUPA

Based in the Bucks area and covering the Southern and Eastern Home Counties it is imperative that the person appointed has PICK experience.

### Business Analyst c.£13,000

Based in Middlesex, the person appointed will analyse financial systems, so it is imperative that he/she has a sound financial background. The current project involves the total update of their European General Ledger and on-line receivables.

### Programmers c.£8-£12,000

Based near Redditch, our client is seeking a number of programmers with relevant VAX/COBOL experience with FMS/VMS/TDMS.

### Analyst/Programmers c.£12-£12,500

Based in Middlesex the successful applicants will have strong COBOL experience, preferably on IBM. If IBM background, then you must have DOS/VSE and ICCF.

### Systems Software Specialists £Negotiable 1 North of England 1 South of England

Our client is seeking very high calibre specialists with relevant MVS/OS experience. Salaries will reflect the importance of these KEY positions.

### Programmers c.£8-£13,500

To join a major multi-national company involved in office automation. Applicants must have at least 2 years' IBM experience with CICS and PLI.

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(7225)

## Telecommunications Engineer

c£8,500

Bristol area

Our Client, a major subsidiary of a multi-national Group, is in the process of developing a nationwide interactive network of Hewlett Packard 3000 minis, using CASE DCK equipment.

This has created a requirement for an additional person who, reporting to the Telecommunications Co-ordinator, will assist in the planning, installation and day to day running of the Company's telecommunications facilities.

Our Client is seeking an ambitious Telecommunications Engineer with at least six months practical involvement in data communications, and the ability to isolate problems, either personally, or by calling in the relevant engineering support.

This newly created, career position will suit someone with a practical bias and the ability to generate positive relationships with users.

This is an excellent opportunity for a young and ambitious person who enjoys variety, challenge and travel and is keen to take advantage of the excellent career prospects available within this growing and highly profitable Organisation.

A current driving licence is essential, as a company car will be available for travel to remote sites.

Starting salary is negotiable in the region of £8,500.

If you possess the necessary level of experience and are looking for an interesting future, contact Ian Payne on 021-236 3781 for further information and application form. Alternatively, send him a brief Resume of your career to date at the Birmingham office address which is shown below.

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(7225)

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## SENIOR SYSTEMS OPPORTUNITIES

Our Client, Univasal (CMS) Ltd., is a small but well-established Software House with teams specialising in the clothing and textile industry and wine and spirits industry. Due to increased demand for their services they now require additional senior DP professionals to join them at both their Windsor and Leicester based offices.

### SYSTEMS SUPPORT ANALYST c.£13,000 + CAR

The essential quality for this position is the ability to support existing installations and new sites in both a formal training role and informal support role. Applicants should have experience of presenting training programmes and providing a high level of documentation for courses and customer support. Any exposure to Burroughs small system would be of benefit.

The Company has now reached a crucial stage with its planned expansion and is dedicated to recruit the right individuals to join their young and dynamic teams. If you can meet the above requirements and would enjoy working in a challenging and rewarding environment, contact Mike Harmer at Apex 01-404 4821 or Tarry Forsey at Univasal (CMS) Ltd. Windsor (07535) 54587 for further details.

### SYSTEMS ANALYSTS to £15,000 + CAR

Candidates should have a sound DP background with experience of designing commercial real time systems on mini or microcomputers. They must also have seen at least one project through from feasibility study to full system implementation. As there will be a good deal of customer contact and support, applicants must be professional in both appearance and attitude.

404 4821

**Apex**

Apex Computer Recruitment Ltd.

London Office: 59 Grays Inn Road, London WC1X 8TL Tel: 01-404 4821  
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# Plenty of work for experienced staff

Contract agencies are enjoying record business, says Keith Holder

BUSINESS is booming. That is the message from contract staff agencies many of which are reporting their highest levels of business. This in turn is leading to increased opportunities for operators, programmers and analysts to cash in on a lucrative part of the market.

The demand is for experienced personnel. Just how expert depends on the area served by the agency, but three years' work on one of the major manufacturer's machines - IBM being a clear preference - and online database experience is a typical requirement.

Most of the larger agencies have their own vetting procedures to screen potentials, checking technical knowledge and references.

This quest to provide top quality staff has its problems. Mike Shinn, personnel manager for CDS-IBM systems software, said it was more difficult than ever to attract staff of a suitable calibre.

One of the major reasons is the reluctance of people to change location. Steve Whiting of Trident, one of the UK's largest contract organisations, said that in many cases, potential staff had only looked at the benefits of contract work, and did not like the idea of chopping and changing location.

The consensus among agencies was that while young or unattached staff enjoyed the variety, those with families soon tired of

the travelling and looked for permanent positions.

Most agencies expressed a desire to build up a team which would carry on for many years.

Some contracts can last for up to two years, requiring temporary relocation, but most are still between six weeks and three months.

Travel, while necessary, need not be widespread as the demand for contract staff falls into well defined

held off investment in new equipment, and this is beginning to show, said Jordan.

There has also been a marked change in the type of systems being installed, with a massive increase in the use of microcomputers, particularly in small companies.

Microcomputers are also now a significant portion of business systems said Marilyn Davidson, a director of CPI, with the Vax the

dominated by IBM, there was a significant increase in the need for staff with experience of other manufacturers' equipment, notably ICL, Honeywell and Univac.

Top of the league in requirements for software and operating systems skills are Cobol and CICS, with HP3000, ICL VME, DM-1 and RPG just behind.

The contract market is still tied to the cities and the demand for staff with financial, accounting and commercial backgrounds is prevalent.

London and the south-east is still the richest hunting ground, though the Midlands and south-west are also fairly safe bets for the job hunter.

According to some contract agencies, once out of the London area there is greater opportunity for those with engineering and manufacturing backgrounds. This is particularly true in Scotland, said Carol Sutherland, of Hill Britton and Associates, who cited the electronics industry, including Ministry of Defence contractors, as sources of employment.

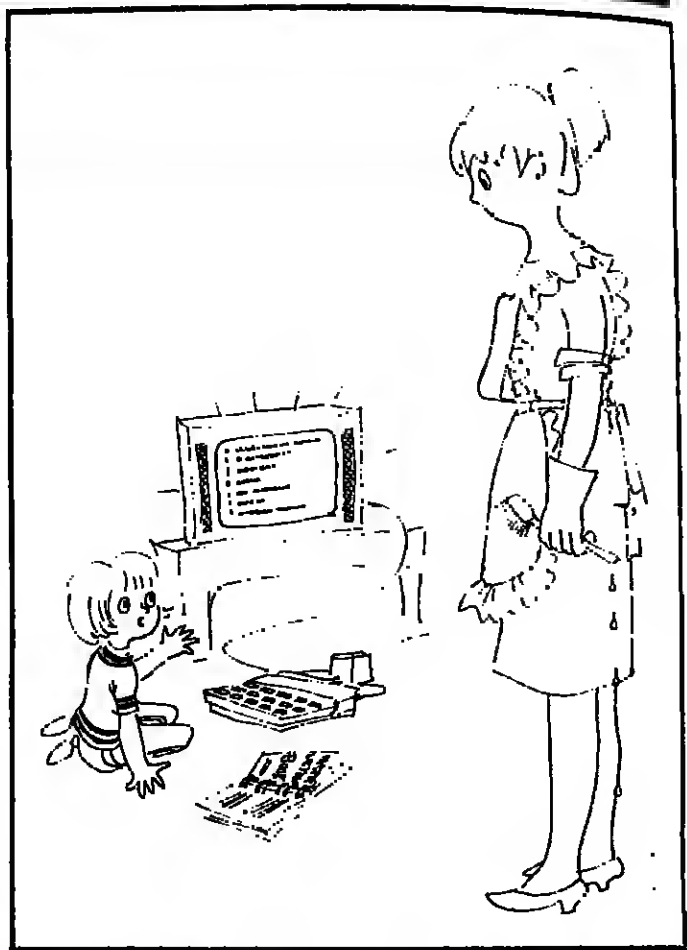
The potential for contract employment does not stop at the British coastline either. Octopus International and CDS-IBM both reported a healthy list of customers in Europe. Requirements for specific experience seem much the same, though there are languages to cope with.

Germany, Belgium and Holland all provide a steady requirement for contract work. Work comes mainly from banks, and financial institutions and UK companies with European offices.

Contract staff can expect to be paid about twice the going rate for permanent staff, though it can rise to three times for jobs in Scotland and remote areas. Set against this is the fact that the contract worker will have to organise his own National Insurance, pension contributions and tax. There is also the possibility that there may be lengthy gaps between contracts.

"It's quite easy, Mummy, you just poke USR10 comma zero then random."

Whiting said a good worker should not find it too difficult to stay in work. While the contract agencies represent the most accepted source for staff, it is possible to go it alone, especially for small systems. This can, of course, be a hazardous business as the degree of protection offered by the agencies is absent. They warn of potential exploitation and advise anyone considering this course to make sure they get a formal contract - and even then check it with a microscope.



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(40/18/11)

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DB/OL 211  
DB/SC 127  
PH 159  
DB 224  
CW 253  
PH/DL 101  
DL 218  
DB 250  
DL 217  
PH 218  
KC 214  
DL 223  
CW 184  
CW 133  
PH/CW 134  
PH 136  
DL 212  
DL 226  
CW 258  
CW 280  
DB 257  
SC 205  
PH 184  
SC 255  
SC 154  
DB 229  
DB 202  
SC 254  
DB 221

Contact: STEVE CASEY, PETER HOLLIDAY,  
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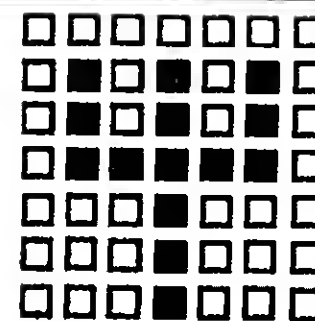
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At least 12 months' experience of ICL George 3 is required. Trainees may be considered.

The Regional Computer Centre is located at Tooting, SW London and current computer services are based on ICL 2956 and 2966 mainframes running under George 3.

DEC mini-computers are also being installed throughout the region to provide Direct Data Capture, Database and Patient Administrative facilities.

Please write with full details or phone:

**PETE CHAPMAN/IAN GARDINER**  
SWTHRA REGIONAL COMPUTER CENTRE  
SPRINGFIELD HOSPITAL, GLENBURNIE ROAD  
LONDON SW17

TELEPHONE: 01-672 9988

(17275)



# PUBLIC SECTOR APPOINTMENTS

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If you have at least 18 months' IBM operating experience and are looking for a position in an expanding installation where your efforts will be recognised, then our career-related operator post may be of interest to you.

Our machine is an eight megabyte IBM 4341, with 3370 FBA Disk, tapes and printers, plus an ever increasing local and remote T.P. network.

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Additionally, housed in the Computer Room is a WANG SYSTEM VES100 with 2 x 280mg disks and a 16mg disk together with two tape drives, which is used for OP and WP projects.

Starting salary will depend on experience to date, and the post is open to men and women.

For further information telephone 01-883 5611 and ask for either David Clark, ext 2193, Ken Ournall, ext 2208, or the Shift Leader, ext 2932.

Application forms, returnable within 14 days of the appearance of this advertisement, from the Controller of Financial Services, London Borough of Harrow, PO Box 21, Civic Centre, Harrow, Middlesex HA1 2UJ. Telephone: 01-883 5611, ext 2338.

**Harrow**

172881

## NORTH EAST THAMES REGIONAL HEALTH AUTHORITY PROGRAMMER/ ANALYSTS

Harold Wood, Essex

This is an opportunity for Programmers with at least two years experience to join teams working on a number of interesting on-line projects.

We have an immediate requirement for two to join the team developing and implementing the Regional Pharmacy System on PDP 11 computers using the MUMPS interactive language. The positions are based at the Regional Computer Centre at Harold Wood, near Romford, Essex and offer:-

- Starting salary to £10,000 depending on experience
- Interesting projects
- Training and development
- Annual salary reviews and scale increments
- Good working conditions
- 36 hour flexible working week
- Pension scheme.

To arrange an informal discussion or to request an application form please contact Eddie Evans, Regional Computer Centre, Harold Wood Hospital, Gubbins Lane, Harold Wood, Romford, Essex. Tel: Ingrebourne 71821.

174391

## UNIVERSITY OF SURREY ANALYST/PROGRAMMER - DATA PROCESSING

The Data Processing Section of the Computing Unit has a vacancy for an Analyst/Programmer to develop systems for the University's Administration and Library. The successful applicant will develop systems on a variety of computer equipment, programming in COBOL.

Applicants should have proven programming ability and a degree or equivalent qualification. The appointment will be made on the Computer and Other Related Staff 1A salary scale, £2100-£11815 per annum, according to age, qualifications and experience.

Further particulars are available from the Staff Office, Guildford GU1 2BA extension 778. Applications in the form of a curriculum vitae (2 copies) including the names and addresses of two referees should be sent to the Staff Office, University of Surrey, Guildford, Surrey GU1 2BA, by 19 February, 1984 quoting reference 250/CV.

172881

## COUNCIL OF THE BOROUGH OF OSWESTRY SENIOR TECHNICAL ASSISTANT

Scale 6/501 (£8,154-£9,660)

Applications are invited from suitably experienced persons for this new post in the Finance Division of my Department, to manage and operate all aspects of the Council's computing facilities. The Borough Council is a small authority with a strictly controlled staffing establishment, but committed to using new technology in order to maximise its efficiency.

The successful applicant will be required to operate a Burroughs B1915 computer without supervision or assistance, to introduce new systems and to advise my Principal Finance Officer on all computing matters.

Further details and applications from the address below. Closing date, 11th February, 1984.

Dated 10th February, 1984

A. Spink  
Chief Executive and Director of Finance

Council Offices, Castle View  
Oswestry, Shropshire SY11 1JR  
Telephone: 0591-654411

17306

Are you interested in helping people and being at the forefront of technical developments?

## TECHNICAL SERVICES MANAGER SENIOR SYSTEMS ANALYST £10,446 - £13,030 inc. (NHS SCALE 14)

Bloomsbury is one of the largest Health Authorities in the U.K. and contains five of the best known and most sophisticated teaching hospitals including the Middlesex and University College Hospitals.

Two new senior posts have recently been created in the Computer Services Department to help harness the benefits of new technology for the improvement of patient care. The Department is currently responsible for several highly successful patient information systems running on three networked PDP 11/70 mini computers, a distributed database of 1880 megabytes, several microprocessors and 170 on-line terminal users.

PLANNED DEVELOPMENTS you will be involved in include:

- installation of local (Ethernet) and wide area communications networks over the whole district which includes the greater part of London's West End

- integrated application and information systems covering all aspects of patient care and health management
- a major expansion in the number of mini and microcomputers in use: at least two large minis are planned in 1984.

We need you to have test, initiative and be educated to degree level to meet the challenge of this worthwhile environment. A minimum of five years computing experience, some of it on DEC equipment and in an interactive environment, is highly desirable. Training will be given where appropriate.

Both positions offer excellent fringe benefits which include:

- Annual salary reviews and scale increments
- Pension scheme & Season ticket loan
- Sports and social club
- Subsidised luncheon facilities.

For an informal discussion please contact Ruth Grace, District Computer Services Officer, on 01 387 5300 ext. 114/115. Or write to Linda Fitzgerald, Computer Services Department, 25 Grafton Way, London WC1E 6DB for an application form and further details, stating which position you are interested in. Closing date for completed applications: 6th February, 1984.

**BLOOMSBURY** Health Authority



## READER IN COMPUTING

Applicants should have a substantial record of successful research and consultancy in computing. The successful candidate will be expected to take a leading role in the continued development of research including externally funded and collaborative projects.

Salary Scale: £12,519-£15,744

Further particulars: The Establishment Clerk, The Polytechnic, Wolverhampton WV1 1SB. Closing date: 14 days from appearance of advertisement.

173821

## EXETER CITY COUNCIL PROGRAMMER

Required in the Computer Section of the City Treasurer's Department to assist with the programming and developing of specific systems.

Sound experience in computer programming (particularly BASIC) is regarded as essential, rather than experience in the public sector or with CMC techniques.

Salary negotiable within the scale £7191-£8712

Further details and an application form are available from the Personnel Officer, Civic Centre, Oldfield, Exeter (Tel No Exeter (0392) 77888 Ext. 2126) to whom completed forms should be returned by the 23rd January 1984.

17188

## TESSIDE POLYTECHNIC COMPUTER CENTRE

WE ARE "AN EQUAL OPPORTUNITIES EMPLOYER". The Computer Centre provides a computing service for the teaching, research and administrative work of the Polytechnic using 3 interconnected Prime 750 computers.

Applications are invited for a

## PROGRAMMER ANALYST

to join the Information and User Support team providing user support including advice and writing technical documents.

The post is graded at Scale 4-5 and the salary, according to qualifications and experience, will be on the following scale: £5,264-£7,122 per annum.

Application forms and further particulars from the Personnel Section, Tessaide, Polytechnic, Borough Road, Middlesbrough, Cleveland TS1 3BA. Telephone 01642 21821, Ext. 4114. Closing date for applications - January 31, 1984.

170471

## PUBLIC HEALTH LABORATORY SERVICE COMMUNICABLE DISEASE SURVEILLANCE CENTRE SENIOR COMPUTER SCIENTIST/STATISTICIAN

Scale 5 Salary scale £9,950-£10,800 inc. at London weighting. The Communicable Disease Surveillance Centre, the unit within the Public Health Laboratory Service with national responsibility for surveillance and control of communicable diseases, is looking for a senior computer scientist to work with a team of medical epidemiologists and other scientists in the exciting field. You will be responsible for statistical computing at the Centre which will include the running of a communicable disease information system and advising on the analysis of data collected in the course of the investigation of outbreaks of communicable diseases and of larger scale research projects.

At least two years relevant experience and a knowledge of FORTRAN are essential and familiarity with statistical packages, ICL GEORGE III, FILETAB and COBOL would be an advantage.

An application form, job description and further particulars may be obtained from Mr A. A. Collins, Centre Administrator, PHLS Communicable Disease Surveillance Centre, 61 Colindale Avenue, London NW9 5EQ. Tel: 01-260 6886. Closing date: 2nd February, 1984.

172851

## GWENT COLLEGE OF HIGHER EDUCATION FACULTY OF INFORMATION SCIENCE AND SYSTEMS TECHNOLOGY

## SENIOR LECTURER IN COMPUTING

Applicants should be graduates with a broad experience of computer science and able to offer a high level of expertise in particular areas. Teaching experience at HNC/HND or degree level is desirable.

Salary: £7,215-£13,443.

Further details and application forms may be obtained from, and should be returned within ten days of appearance of advertisement, to: The College Secretary, Gwent College of Higher Education, College Crescent, Caerleon, Gwent, NP6 1XJ.

172881

## SMR Sales & Marketing Recruiters Ltd Leaders in High Technology Recruitment

## SENIOR SALES EXECUTIVES NOBODY DOES IT BETTER!

In fact, only one other manufacturer does it at all!

Our client manufactures a computer system that is so predominant and successful that to mention the particular market place would instantly reveal the product concerned. Yet it is only one of a range of minicomputers with a system price ranging from £25,000 to £500,000. The company has a considerable reputation for product excellence and its ability to sustain a growth rate of 30% per annum is no small feat due to the through-range compatibility, as well as being one of the very few computer manufacturers able to provide commercial and industrial turnkey systems without necessarily having to rely on external systems houses.

Last year the company once again enjoyed considerable success with the top echelon of the sales force earning in excess of £50,000, due not only to effective selling, but also aided by a high level of pre- and post-sales support and low staff turnover - the hallmark of a happy company!

This continuing expansion has consequently created a demand for additional sales people in

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We are therefore seeking a couple of sales people from a hardware systems or computer services background, who really understand industrial and commercial applications. This is an opportunity that will particularly appeal to talented sales people who feel that their potential is not really being achieved.

Our client offers a very attractive compensation plan with low sales targets and high earnings with a company car and guaranteed minimum first year earnings of around £20,000. Yet, this guarantee is not set against new business commission earnings!

Please contact Alasdair Scott, Lindsay Howie, or Mike Linford, quoting reference SSB014.

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## COBOL PROGRAMMER HP 3000

circa £8,500 p.a.

Hammicks Book Shops Limited are a leading book retail/wholesale company. All company systems are at present run on an HP 3000 Series III system with 1 1/2 mb main memory and 360 mb of disc storage.

Reporting to the Computer Manager, this is an opportunity to join an energetic expanding company, with major developments in point of sale data capture and the most innovative systems in the book trade. The position will involve user liaison, systems analysis as well as the writing of new systems and maintaining of current systems.

The ideal applicant will be aged under 30 with a good knowledge of COBOL programming using IMAGE Database and VIEW.

Please write giving full employment history to:

Stephan Mansfield  
Management Services Director  
Hammicks Book Shops Ltd  
Alton, Hants GU34 2PJ  
Telephone: (0420) 85822

172281

## BOX NUMBERS

Box number replies should be addressed to:

Box Number  
c/o Computer Weekly  
Quadrant House, The Quadrant,  
Buxton, Surrey SM2 5AB

## OPENINGS IN BERKSHIRE

### Contract Positions

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TECHNICAL SALES: Previous sales experience necessary technically competent in Micros - Electronics on I.C.s quota HNC minimum. Salary circa £20K.

Please telephone or send c.v. to:  
BORDER PERSONNEL, 105A LONDON STREET  
READING, BERKS RG1 4QA  
Tel: 0734 595335

172301

## SAUDI ARABIA PROGRAMMER/ SYSTEMS PLANNER C. £20,000 TAX FREE

We require a highly qualified and motivated individual to work in our planning unit which has responsibility for the implementation of the management information system for the Jubail Human Resources Development Institute which we operate on behalf of the Saudi Arabian government.

The successful applicant will have five years' experience programming in Basic using CP/M and/or MS-DOS. Assembly language is also required. Additionally, two years' mini/mainframe experience would be an asset as well as experience with micro networking (NCR/Module).

This is a single status assignment with a one-year renewable agreement. Qualified applicants should forward a full cv to:

Glidensetter Projects, 105 Oxford Road, Reading, Berks RG1 7UD.

173781

## SALES BIT Quality of Management - 79

## Surprise your trainee - join him for a full day in the field

A BASIC rule of field training is that only two representatives of your company should be involved - typically the salesman and his manager. There is no additional room for visiting dignitaries, trainees, or yo-yos from head office.

What we are talking about is a serious selling and training call which means that any possibility of intimidating the client or the salesman by weight of numbers must be avoided.

The field training exercise must be based on a normal working day if it is to be effective. Involvement in a sequence of sales calls that have been especially set up by the salesman to create the best possible impression is of little educational value.

It is important to discover not only how the salesman operates within the individual sales call but

**The sales manager must be seen to put in a full working day rather than sloping off in the middle of the afternoon with lame excuses about "sorting out a few problems back at the office"**

also how he organises his normal working day.

There is only one effective way of achieving such an insight and that is surprise!

Don't make arrangements to accompany your salespeople well in advance - make them the previous evening. After all, what hardworking and well-organised salesman could object to that?

It may turn out that he has to make alternative arrangements for getting his kids in school, or it may completely ruin his afternoon game of golf. But who's the real bad guy in that situation? Certainly not the sales manager trying to do a normal day's work and trying to gain a true perspective of what his salespeople are giving in return for a "fair day's pay".

By the same token the sales manager must be seen to put in a full working day rather than sloping off in the middle of the afternoon with lame excuses about "sorting out a few problems back at the office." The salesman is almost certain to draw the conclusion that a full selling day is too much for you.

So, if the boss feels the need to terminate the selling day at 4pm, why shouldn't he?

The field training session should be like any other selling day with the first call at 8.30am, or the earliest time that can be made, and the last at the very end of the business day. Anything else merely condones insufficient discipline and lack of commitment.

One important discipline is deliberately to make a few calls yourself with the salesman to come out of your visit, but also thanking him for his time. It is a courtesy that will not go unnoticed and which is due to you consider the time spent together important and worthwhile.

In other words, treat him as you would expect him to treat your company's clients.

Alan Williams

Many sales managers are reluctant to put themselves on display in this way for fear of making mistakes, or perhaps looking foolish in front of a subordinate. This is misplaced insecurity. What is the point of the exercise - to prove that you are infallible, the perfect salesman? Of course not - it is to give the salesman the assurance of knowing that all sales people make mistakes, and the object lesson is witnessing that one can often learn more from seeing other people make mistakes.

It also makes the point that you are not a head office theorist but rather someone who really appreciates the realities of the field, and above all you are a normal fallible human being to whom the salesman can relate.

It's worth mentioning the implications of occasionally subcontracting field training to senior salespeople. The first person who comes to mind is your star salesman. It may seem logical that the salesman who has the ability to top the league table year after year should have the right skills to pass on to the aspiring young salesman, but you couldn't be more wrong.

Top performers more often than not break the rules and cut corners, but you allow them to get away with it because they consistently over-perform.

The effect on a sales trainee of being exposed to this kind of salesman is to accept a method of operation that is unlikely to work for him or her. The completely demoralised by the apparent ease and confidence with which the ace salesman is able to get the business.

The right kind of senior salesman to provide field training is one of your well established con-

**The right kind of senior salesman to provide field training is one of your well-established consistent "target performers"**

sistent "target performers". He is the kind of person who always operates by the book, always keeps his paperwork in order, never fails to work a full day and sees training a "routinised" as an attractive challenge rather than an imposition.

One final point: be sure to follow up the training session with a note to the salesman, not only highlighting the most salient points to come out of your visit, but also thanking him for his time. It is a courtesy that will not go unnoticed and which is due to you consider the time spent together important and worthwhile.

In other words, treat him as you would expect him to treat your company's clients.

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Thursday, January 19, 1984

## CSA fears reshuffle at DoTI will hit industry

by John Kavanagh  
THE reshuffle of top civil servants at the Department of Trade and Industry has come at the wrong time for the computer industry and could further delay government decisions on key issues.  
That is the view of the Computing Services Association (CSA), which points to delays in decisions on support for exporting and for educational software. It is also concerned about the future role of British Telecom in the computing business.  
Six under-secretaries are changing jobs. The department says it is normal for civil servants to move after three or four years. But CSA director-general Doug Eyskens says they should stay longer.  
"A lot of the issues in our industry are very technical," he says. "All these people were doing good jobs, but just as they get a feel for the industry, they get moved on."  
Eyskens says the reshuffle followed a "frustrating" 1983. Decisions had been delayed because of

the election, the merging of the trade and industry departments and the appointment and subsequent resignation of industry secretary Cecil Parkinson.  
As a result, the UK could miss out on the world market for software for schools, Eyskens says. "This market's relatively small in the UK but it could be a major export market - and the UK has the right pedigree to be successful," he says.  
"The UK has a high reputation in educational publishing and in software, and English is widely used in education around the world."  
"We should be building up a strong home base of proven software - but we need a government lead. One problem is that it's not even clear which department it should come under."  
This comment reflects the fact that microcomputers have been put in UK schools with backing from the Department of Trade and Industry, but the Department of

Education and Science is responsible for training teachers.  
Eyskens also points to the long-overdue decision on further funding for the government's Export IT organisation, set up at the end of 1981 with one year's money. It is still surviving on that initial backing.  
David Broad, chairman of the British Microcomputer Manufacturers Group, is worried that the department could get bogged down in the Telecommunications Bill and the sale of British Telecom to the private sector.  
"Our worry is that the size and complexity of the bill will create an enormous workload and thus put back some other very important issues," he says.  
The CSA is concerned about the future of British Telecom's BT Enterprises, which sells telephones, network services, information services and business systems and software. At a top-level CSA meeting last week, members said they were worried

that BT Enterprises could get unfair advantages from its links with its parent.  
BT says each subsidiary is a proper profit centre, paying for its own telephones, buildings and promotion.  
"We've had assurances from BT - but who's to judge whether it's overstepping the mark?" Eyskens says.  
BT Merlin, the business systems arm, has 3.5 million business customers because it handles the sale of telephone exchanges, modems and teleprinters.  
Under the reshuffle Alistair McDonald, head of the information technology division, replaces Jonathan Solomon, who moves to head the quality and education division. Jack Leeming goes from there to the space. Post Office and film industry divisions. He takes over from Philip Cooper, who is going to the department's Warren Spring Laboratory because the director, Dr Alan Robinson, is retiring.



EYEIONS... "A frustrating 1983."

## Tycom takes a Rita

by George Black  
MICRO manufacturer Tycom has followed its scoop of the Tory Party contract by victory in the Rita (Recognition of Information Technology Achievement) awards.  
The maker of the "future-proofed" Microframe has been named Newcomer of the Year, a title sponsored by Computer Weekly under the Rita scheme.  
Tycom, under managing director Allen Timpany, was chosen as the start-up company that the judges thought was the best example of how Britain could remain a force in IT markets. The results were announced on Tuesday night at the Wiltch Computer Show in Birmingham.  
Timpany - the consortium made up of British Telecom, BMAP Publications and distributor Prism - won the systems innovation prize for its Micro 800, the modern link giving micro users access to Prestel and allowing



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Personality of the Year award; Ashton-Tate had the satisfaction of beating IBM in the award for User Training Manual of the Year for its documentation of Friday, and software Product of the Year was Micro, the application of code generator produced by Compact Software of Dorking, Surrey.  
Supplier of the Year was Bearmaster of Ilford, a software house supplying low-priced micro support and accounting packages, and User of the Year was the property group, Haslemere Estates.

## US Defence bids to stifle personal computers

by George Black  
THE US Department of Defence is talking to NATO's co-ordinating committee on controls of exports (COCOM) about clamping down on the flow of personal computers.  
A US government spokesman said the matter was "under some study" and it was likely that there would be "some change in policy". He would not comment on speculation that the world's best-selling micro, the IBM-PC, would be affected or that all 16-bit machines would need licences to be exported to the Eastern bloc.  
US trade department officials, who have been fighting the Pen-

gun's move to impose tight controls on the movement of high technology products, are arguing that it is already too late to have any impact on the traffic in 16-bit machines such as the IBM-PC, of which hundreds of thousands of units have already been sold.  
The discussions will give new momentum to the issue of export controls - or to what extent the US can lay down conditions for the use of its products beyond its own shores.  
An industry department delegation to Washington next month, headed by secretary of state Norman Tebbit, will be arguing the

view that the US has overstepped the limits. Industry department officials have been talking to IBM about its recent directive to 30 leading British users of its mainframe hardware advising them about the need for US licences.  
IBM told its customers that US export rules restricted them from moving or re-selling their equipment and to do this they needed to apply to either the American Em-

bassy in London or the Commerce Department in Washington.  
The rules are framed in the US Export Administration Act which expired in the autumn, and which is only being kept in force through emergency measures taken by President Reagan. With the US administration resuming work after the Christmas recess, the battle over the shape of the new act will also be hotting up again.

## So what's new in the public sector?

The Chartered Institute of Public Finance and Accountancy will be promoting a financial modelling workshop and exhibition alongside its annual conference in Brighton on June 6 and 7, 1984.

As a supplier it will provide a unique opportunity for you to bring your products to the attention of delegates from the whole of the public sector.

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Further information from Julia Fowler, Conference Organiser, 1 Buckingham Place, London SW1E 6HS. Tel: 01-828 7681

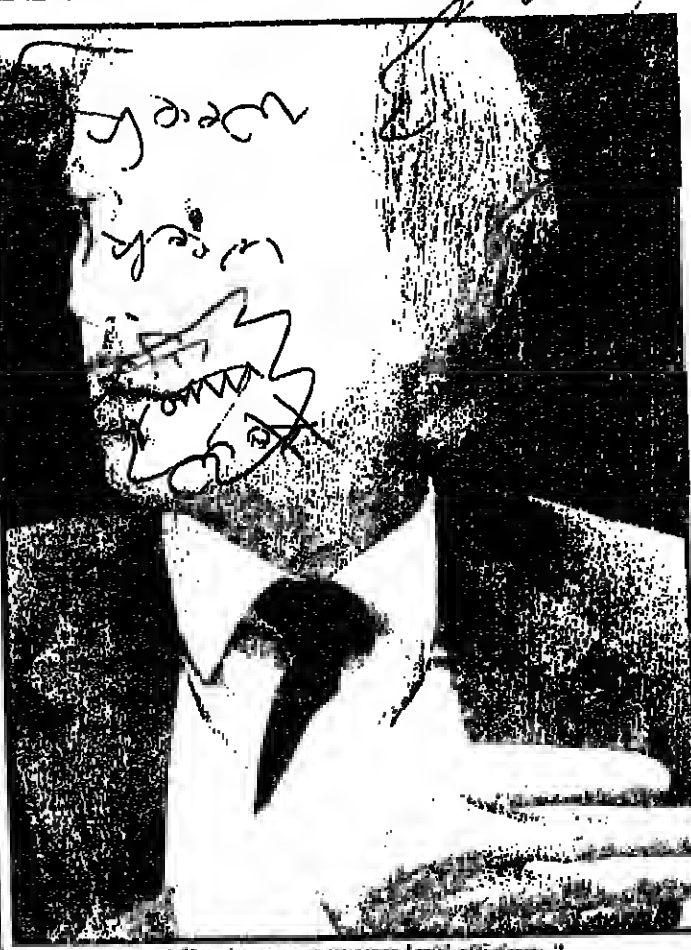
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## Europe takes a step closer to unity

by Donald Kennett  
ANOTHER step towards the creation of a unified European information technology market was taken last week with the agreement by Europe's telecommunications authorities to accelerate their move towards common standards.  
Responding to a request from the European commission, senior telecommunications officials from the 26 countries in CEPT (the Conference of European Postal and Telecommunications authorities) agreed at a private meeting in Paris to speed up their programme of network harmonisation and inter-standardisation.  
The work is expected to take

some time and no details were released about the measures that will be taken to achieve it. A British Telecom spokesman said, however, that a central theme would be digital interfaces for terminal equipment to facilitate end-to-end communication between users across national boundaries. The harmonisation of standards would increase the opportunities for the expansion of information technology across Europe, he added.  
The harmonisation of standards was singled out as one of the six "action lines" for telecommunications adopted by the European Council of Ministers in September. The Commission followed that up by convening a group of officials close to the industry ministers in each of the member states to progress the policy.  
The group has met in Brussels three times since November to discuss the detail of the actions. It plans its next meeting early next month. Other action lines in the EEC strategy cover co-ordinated planning, common R&D, transnational links, developing the telecommunications infrastructures of the poorer EEC countries, and opening public procurement in EEC countries to supply from other EEC countries.

Standards have been a problem in that even where they have been developed internationally they have been implemented differently in different countries. X25 is said to be a prime example of this.  
As EEC IT task force chief, Michel Carpentier, pointed out late last year that so effectively harmonised European IT market would be 30% of the world's total, whereas no European country accounts for more than 4% of the world market on its own.  
Such a harmonised market would give European manufacturers a significant advantage in developing products to compete with the much-feared Japanese, whose home market accounts for 12% of the world.



HOLDEN... "The people are more concerned with efficiency."

## Drive for efficiency shows in training

by Philip Hunter  
THE systems analysis training market is booming, while demand for the traditional courses in programming has fallen off, according to a survey due next month from the National Computing Centre.  
Fewer programmers have been changing jobs during the recession, the survey says, and their employers have therefore been more willing to train them in systems design and fourth genera-

tion applications generators.  
"People are becoming more concerned with efficiency of systems," explains Keith Holden, NCC group manager for training. Firms are sending their people on courses about systems maintenance and design.  
Another reason for the trend is that many government contracts awarded by the CCTA specify

## DEC shows recovery but Prime falls

DIGITAL Equipment showed a sharp recovery in its second quarter results to December. Following the dip in the previous quarter caused by poor sales of its personal computer, revenues were up 40% on the 1982 second quarter to \$1.4 billion and net profits up 32% to \$80 million. Half-year revenues rose 29% to \$2.5 billion, but half-year profits were down 18% from a year earlier to \$90 million.  
At Burroughs' fourth quarter profit of \$81 million boosted, full-year profits 67% to \$197 million in revenues of \$4.4 billion, despite mid-year losses. Prime's full-year net profit fell 28% to \$33 million on revenues which increased by 19% to \$517 million.

## Bill changes

MEMBERS of the Telecommunications Engineering and Manufacturing Association are hammering out specific amendments to the Telecommunications Bill, which goes into its Committee stage on February 9. The association fears that British Telecom's suppliers will get squeezed when BT develops its own manufacturing capacity and importing equipment. It is pressing for parliamentary scrutiny of BT's licence to prevent this. BT is opposing any amendments to the legislation.

## Trial put off

THE full trial of the case between Mercury, the private telecommunications company, and the telecommunications union, the POEU, looks like being put off until July. It was expected to be heard this month. The date will be set at a preliminary hearing on February 28. Mercury is seeking a permanent injunction to stop the POEU taking industrial action against it.

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## Users are unhappy with their support

by John Riley  
MAINFRAME and minicomputer manufacturers should give their users better technical support and better applications software. These are the main complaints to emerge from this year's Computer Weekly/Datapro user satisfaction survey.  
Twice as many users responded to this year's survey, the largest so far with 2,064 responses. Apart from the two general grouses, most are satisfied with their machines. Moreover, most of those

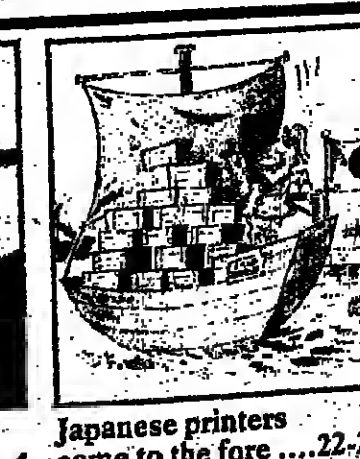
users who are not satisfied with their machines say that they will stay loyal to their manufacturers.  
Unsatisfactory technical support - in user education, documentation and trouble-shooting system faults - was also the main overall complaint last year, which suggests that in general manufacturers are turning a deaf ear to users' complaints in those areas.  
The IBM plug-compatible

manufacturers, Amdahl and National Advanced Systems (NAS), top the poll in the mainframe section for overall satisfaction, and nearly 400 IBM mainframe users give IBM a vote of confidence.  
The two mainframe companies that came lowest overall in the satisfaction ratings last year, Sperry and NCR, also come lowest this year.  
However, there is a sharp increase in the number of users prepared to recommend their

systems, and less than 5% of Sperry and NCR users intend to switch to another manufacturer.  
Hewlett-Packard, Digital Equipment and Perkin-Elmer top the user satisfaction ratings in the minicomputer section, and IBM comes fourth.  
Several minicomputer companies are down on last year; the company with the biggest drop in user satisfaction is NCR, mainly due to lack of all the promised software of support and late installation of equipment.



CL's Parfitt joins protection debate



Japanese printers come to the fore



Government shows standards way

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## Taxmen stay out over pilot PAYE scheme

by George Black  
MORE than 400 taxmen are staying out of work until the High Court rules on their computerisation dispute at the end of next week.  
They rejected a management suggestion in the court last week that they should return to work on full pay without prejudice to the outcome of the case while waiting for the official verdict.  
The Inland Revenue Staff Federation immediately put a counter-proposal that the men would work but not on the computer pilot scheme, which management

A management spokesman says: "417 staff have been TDRD for refusing to implement COP" - which translated means "temporarily relieved of duty for refusing to implement the computerisation of PAYE".  
The union side will not comment on possible future developments for fear of undermining its own legal position, but the executive committee is believed to be considering bringing in a voluntary levy among its members - as has happened in previous civil service disputes - to bolster its £1 million fighting fund.

Fourteen tax offices in the Midlands are scheduled to take part in a pilot scheme lasting the whole of 1984, with progressive implementation over the whole country during the following three years. The union claims that the work does not fall within the normal scope of its duties and management, therefore, has no right to suspend its members.  
The Revenue says they are not suspended, only relieved of duties to which they can return voluntarily at any time. Around 125 staff are already participating in the pilot scheme.  
The full five-day hearing is due

to begin next Monday.  
There is believed to be no precedent for a union taking its managers to court for breach of terms of employment involving new technology. The case could set an important precedent. At last Wednesday's brief hearing the court decided to adjourn until the full details could be investigated.  
The union has chosen seven of its employees as "test" examples of employees, whom it says have been unfairly treated.  
The computerisation of PAYE was introduced in 1980. The contract with ICL and could

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## Software house gets a tonic

VENTURE capitalist Alan Patrick Associates has injected £500,000 into software house Package Programs Limited for a 25% stake in the company.

Roy Taylor, chairman of Package Programs, says: "In recent years we have had 50% compound growth and that was putting a strain on our own resources."

The cash will be used to maintain that performance. Taylor retains a 66% stake in the company, and Ronald Cohen of Alan Patrick gets a seat on the board.

In the year to September 1983 the company reported turnover up 47% at £3,975 million. Taylor is looking for £6 million in the current year and £10 million in 1985. In 1983 exports contributed almost £1 million, and Taylor sees overseas business continuing to expand, especially in the Gulf.

Package Programs was set up in 1970 - and it claims to be the biggest supplier of financial and management information systems in the UK, numbering "40% of the top companies in the stock exchange listing" among its customers.

The company is licensee for US software houses, including Software International, Cyborg Systems, and Execucom.

Alan Patrick's high technology interests in the UK include an investment in Sinclair Research and a 15% stake in Cawdor, the holding company of Future Com-

## DEC hopes All-in-One sales will help figures

by Philip Hunter  
DIGITAL Equipment hopes that a recent surge in demand for its All-in-One integrated office automation system will restore the profitability lost last year. The company suffered a slump in profits in 1983, partly because of poor sales of its DEC Professional workstation and confusion over future product strategy.

But worldwide sales of the All-in-One system, based on the Vax mini series, have reached 600, worth around £150 million, since the launch last year, giving hope of better financial results this year.

In the UK 40 systems have been sold, including an order from ICI worth £500,000 but likely to reach several million pounds.

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# Intel settles its copyright case

by Philip Hunter

INTEL has settled its copyright dispute with Nippon Electric Company (NEC) over unlicensed second sourcing of microprocessors.

Terms of the settlement have not been disclosed, but NEC is understood to have agreed to stop making the 8086 16-bit processor, while being allowed to continue second sourcing the 8080 and 8085 eight-bit families.

This would mean that NEC no longer has a 16-bit processor, and could be a leading contender in second sourcing the new NS16000 16 and 32-bit family of chips from National Semiconductor. But NEC would not comment on the position.

Meanwhile Intel is putting pressure on another Japanese company Mitsubishi, to come to a settlement over second sourcing of chips.

"Both Mitsubishi and NEC have made copies of our processors that violate copyright protection," says Dave House, Intel vice president and general manager for microprocessors.

"Mitsubishi has reverse engineered the product and would like to licence it."

With ever increasing demand for 16-bit processors, and longer delivery times, Intel is itself under pressure to find another recognised second source, as well as to step up its own production.

House admits that Intel is going

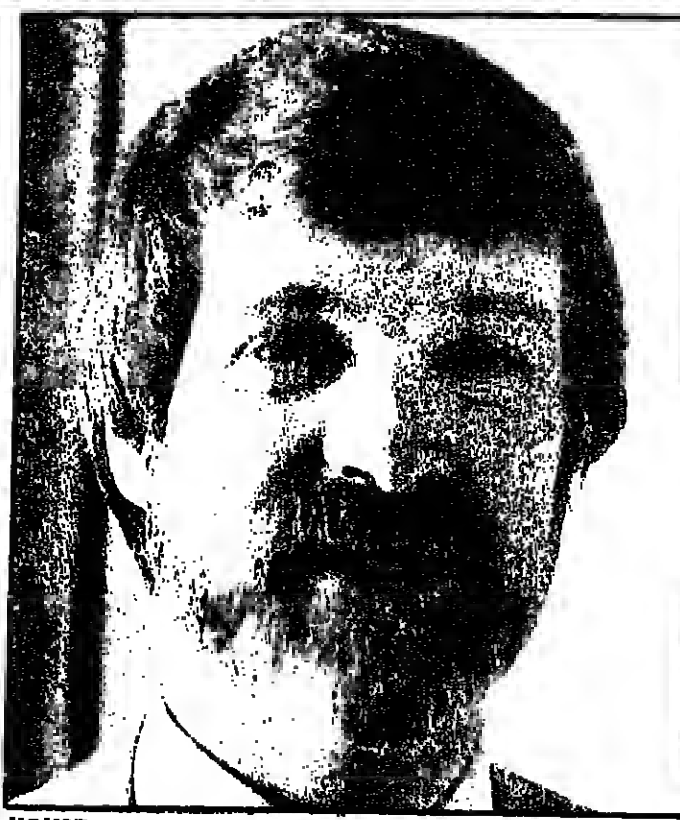
to find it difficult satisfying demand this year.

"We think we're going to keep our customers aloft, but the market's going to be pretty tight."

House adds that Intel is investing heavily this year to expand its chip-making plants in the US.

Intel's official second sources for its 8086 16-bit family of processors are Advanced Micro Devices in the US, Siemens in Europe, and Fujitsu in Japan, with Mitsubishi possibly to be added to the list. In the US, Harris also produces a CMOS version of the 8086.

Intel is the world's leading supplier of 16-bit processors, delivering 14 million 8086s in 1982. IBM has a 17.5% stake in the company, with the option of raising its holding to 30%.



HOUSE... "Mitsubishi would like to licence it."

## Young French say they're unhappy

by Jack Gee

FRENCH computer specialists are young, got bigger salary increases in 1983 than people in other industries, earn 153,000 francs (£12,400) a year on average, but are dissatisfied with their income and expect a drop in living standards this year, according to a national survey.

Although women account for 37% of France's working population, they represent only 15% of staff in the computer industry — compared with 18% a year ago — and are even fewer in the top echelons.

Industry weekly *OI Informatique Hebdo*, which has conducted the investigation about working conditions, says that although 29% of analysts and programmers are female, they account for only 13% of project chiefs and 4% of managers.

Many specialists holding down

jobs as departmental chiefs claim they are earning salaries at the level of an analyst programmer.

*OI Informatique* says that more and more jobs are being offered by service firms.

These totalled 30% of all advertised vacancies last year.

Service firms employ about 15% of France's computer specialists.

The average age in the industry is 32. This marks no change over the past 10 years. With an average salary of 153,000 francs (£12,400), the computer specialist got a 10% rise in 1983 while national wages increases were limited to 8% by the government in the framework of its austerity programme.

However, although the computer specialist enjoyed about a 0.5% improvement in his living standards last year, he is less optimistic about 1984, the survey reports.

The 100,000 francs a year salary mark, equivalent to £8,000 in Britain, was topped by 78% of people in the industry last year. In 1982 only 68% passed this level, 53% in 1980 and 28% in 1977.

Those who earn more than 100,000 francs include 98% of managers and sales people, 96% of project leaders, 61% of programmer-analysts and 55% of programmers.

*OI Informatique* says that 41% consider they are earning more than people with comparable qualifications in other industries and 44% felt they were getting equal salary treatment.

Staff earning under 130,000 francs (£10,400) a year said they were unhappy in their jobs and those with salaries below 107,000 francs (£8,560) reported dissatisfaction with their earnings.

## When computers make life harder

by Philip Hunter

COMPUTER technology does not always make life easier in the office, and can actually increase costs, according to a survey\* of leading users of office systems.

"Costs can increase because the interface to equipment becomes more complex. In consequence people don't understand it and more training is required," says Peter Lines, principal consultant with Input, which did the survey.

Another problem is that people

quickly take word processors for granted, and assume that mistakes are automatically corrected. "In one case, people were submitting shoddy reports because they felt the new technology could solve the problems," says Lines.

"There is also a general warning from our survey that central word processing can cause time around problems. By maximising productivity in one area, it can reduce it in others."

Three companies that took part in the survey reported that installa-

tion of word processors had definitely resulted in extra cost.

The survey attempts to find out how companies are justifying the cost of office automation, whether stand-alone word processors, or more sophisticated office systems with local area networking and electronic mail. As systems become more complex, costs are increasingly hard to justify, says Lines.

\*Methods of Cost/Benefit Analysis for Office Systems, from Input, 35 Piccadilly, London W1V 9PB.

## Supermini maker goes downmarket

by John Riley

PERKIN-ELMER manufacturer SUPERMINI extended down into the microcomputer market with the launch of its Motorola 68000-based workstation at the Which Computer Show last week.

Called the 7350 Professional Computer, and offering a Unix System III-based operating system, it offers compatibility with Perkin-Elmer's Series 3200 32-bit minicomputers.

"This rounds out our product strategy," says Fred Mascarenhas, Perkin-Elmer's UK marketing manager. "We now cover the market from micros to mainframes — from 0.3 to 21 mips — with one industry operating system across the range."

"Our strategy contrasts with that of IBM and Digital Equipment," Mascarenhas adds. "IBM has a lot of different operating systems, so that software that works on small machines won't work on large ones. DEC's total strategy is confused with no common compatibility between its three different micro systems, its PDP and Vax minis and its Dec-System 10 and 20s."

Perkin-Elmer's 7350 Professional Computer comes in three configurations: a single-user

workstation with 320 Kbytes user memory and 15 Mbytes of Winchester disc storage; a colour graphics workstation with 445 Kbytes user memory; and a multifunction cluster controller console version which enables three terminals to be added, although these do not have access to graphics facilities.

Mascarenhas claims that the colour graphics version is the first to be based on the 32/16-bit 68000 chip. He says the 7350 machine has "soft" programmable keys and expects to ship 300-400 machines this year — mainly to large users and existing customers. A typical price for the single user version is £7,430 and that of the colour graphics workstation is £9,200.

The launch of the 7350 marks an extension of Perkin-Elmer's push into the commercial market, initiated last October when it signed up Brighton-based ABS Computers, itself a minifirm, as an OEM.

Several applications packages come with the machine. These include Ace Microsystems' Lex/32 word processing package, Access Technology's Supercomp-Twenty spreadsheet system, and Precision Visuals' DI-3000 and Grafmaker graphics packages.



MASCARENHAS... "This rounds out product strategy."

## Small firms get free export advice

SMALL firms trying to export can get £100 worth of free advice from Technical Help for Exporters, a 60-strong consultancy backed by the British Overseas Trade Board and the British Standards Institution.

The organisation provides information on overseas regulations, codes of practice, technical standards for manufactured goods and so on. The offer runs until the end of the year. It applies to UK manufacturing firms with up to 200 staff at the site concerned.

Technical Help for Exporters is at the BSI, Linford Wood, Milton Keynes MK14 6LE. Tel: (0908) 320033.

## HP distributor

HEWLETT-PACKARD has appointed Mideltron to distribute and support its micro, the HPI150. The deal will be worth at least £4 million in the first year. Mideltron is to establish a network of 40 dealers in areas where HP is not represented. The two companies have already done business together, with Mideltron distributing HP printer and plotter products.

## Access widens

USERS of IBM PCs and compatible micros will soon have access to a wider range of machines on Ethernet local area networks following an agreement on network software compatibility between Bridge Communications and 3Com. Sphinx, which holds UK marketing rights for Bridge products, says that 3Com, which makes Ethernet boards for the IBM-PC, has made its software totally compatible with Xerox Network Systems protocols used by Bridge and others.

## Toshiba dealers

TOSHIBA distributor Scan Computers has signed the first of a nationwide chain of dealers. Hart Computers will sell Toshiba T-300 micros and P1350 printers in London and the south. Scan Computers was appointed sole UK distributor for Toshiba last September and plans to set up a nationwide network of dealers by the spring.

## Texas manager

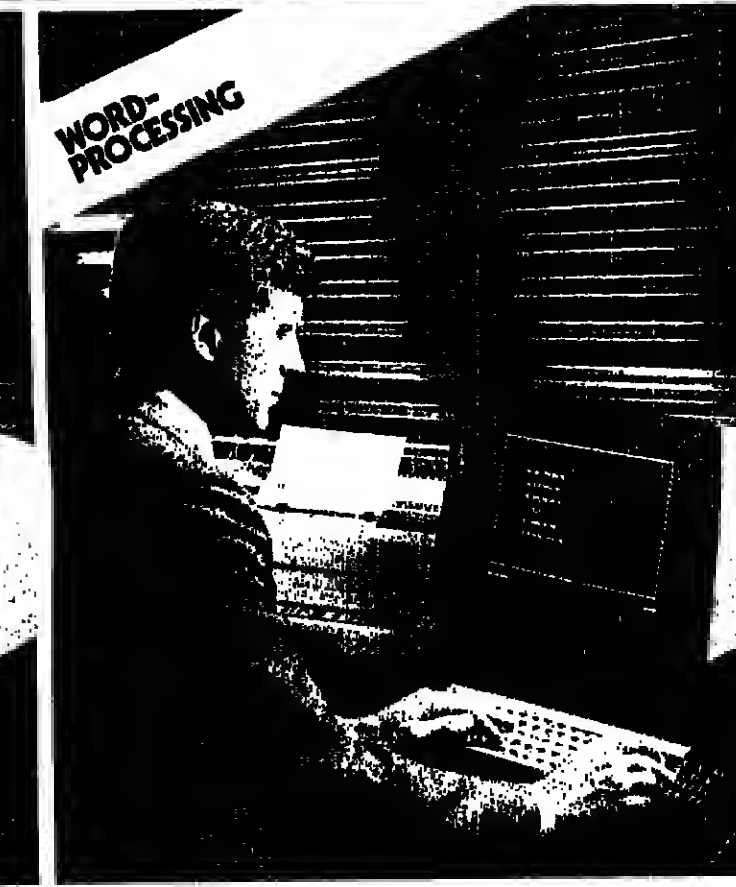
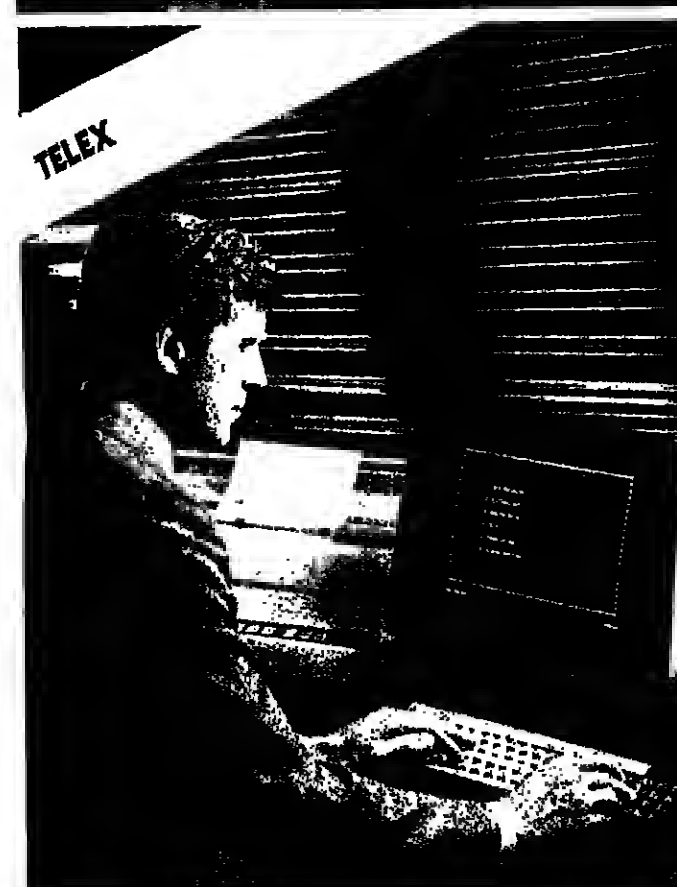
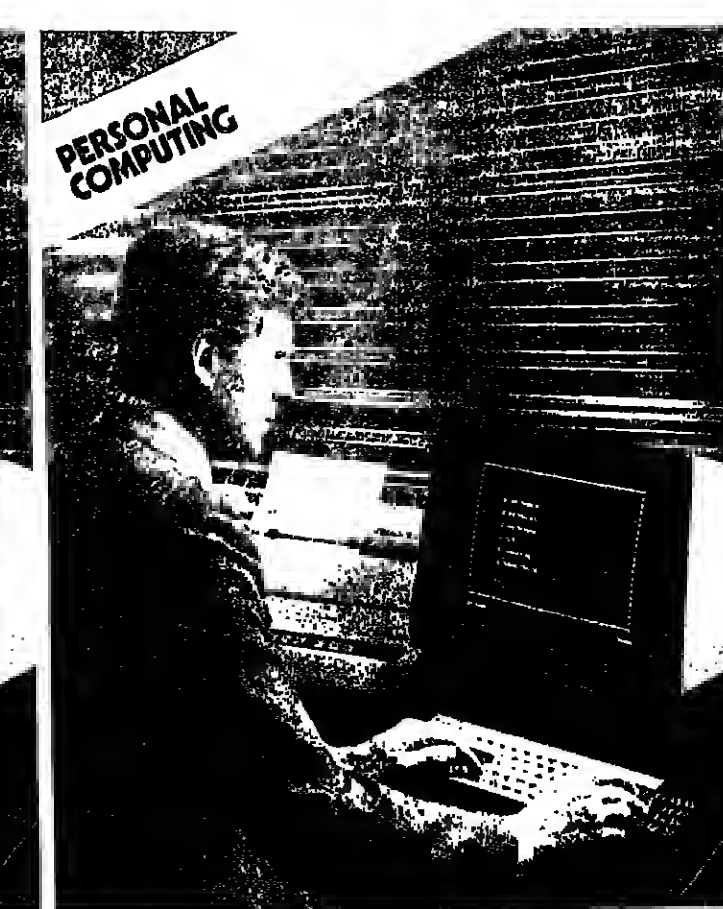
TEXAS Instruments announced the appointment of a new managing director, Peter Van Cuylenberg, last week. Aged 35, Van Cuylenberg has worked for Texas Instruments since 1973, joining them from EMI, where he worked in electronics. He replaces Rod Atwood who left in December 1983 to join Systime. Van Cuylenberg has worked for TI in Austin, Texas, where he was in the home and personal computer division, and in Nice, France, where he was responsible for European strategy.

## HP attacks Korea

US COMPUTER and instruments firm Hewlett-Packard is stepping up its attack on Korea — the second fastest growing market in the Far East — by forming a local manufacturing and sales company. Samsung-Hewlett-Packard will be 55% owned by the US firm and 45% by a local company, Samsung Electronics, which has sales of \$900 million. The partners say the deal puts them in a strong position to win a lot of the business expected when Korea hosts the 1988 Asian Games and 1988 Olympics, as hotels, shops and hospitals will be looking for computer systems.

## Unix system deal

AT&T IS to give a shove to its System V of the Unix operating system through a deal with CPM author Digital Research. Digital hopes to build a library of applications for AT&T by the end of the year to run on several different microprocessors.



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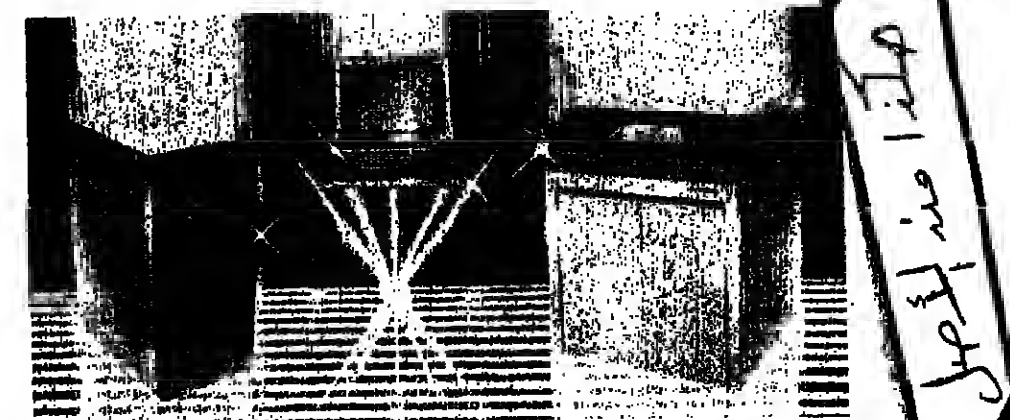
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## Schools price war escalates

by Philip Hunter  
APPLE and Commodore have stepped up competition in the UK education market by cutting the price of computers to schools by about 30%.

The move comes as secondary schools are having to pay more for computers with the end of government subsidies.

Secondary and primary schools can now buy an Apple IIe, power-supply, disc drive and monitor for under £800. The recommended retail price is £1,200.

Commodore is offering schools its 64 computer, with disc drive and the Logo education language, for £300, compared with recommended retail of £472. A monitor is extra, although a standard television set can be used.

Research Machines, a big UK supplier of computers to schools, is not cutting prices, but is offering free software to schools which buy its workstations and spend at least £2,500. The free software includes the word processing package Wordstar, the languages Pascal, Logo and Basic, and the Quest database enquiry language.

A basic 480Z standalone computer without the software, but including floppy disc drive and colour monitor, costs £585.

Sinclair Research is not cutting prices to schools either, but its Spectrum is still among the cheapest of the leading education micros. It costs £472, including a colour monitor.

Acorn, the other leading supplier of computers to schools, is also leaving its prices unchanged for the moment. Its BBC Model B machine costs £650, including colour monitor.

Primary schools can reclaim half the purchase price from the government for the three UK-made machines - the Spectrum, BBC, and Research Machines' 480Z.

A similar scheme for secondary schools ended in December. While competition heats up in the UK schools market, the BBC has won its largest single US order for 170 of the Acorn-built machines. A secondary school in Phoenix, Arizona, chose the BBC computers in preference to offerings from Apple and Atari, both US companies.



## Crusaders want more women

by Nuala Moran  
A CAMPAIGN has been launched to bring more women engineers into UK industry, where only 1% of the country's professional engineers are women, compared to 9% in the US.

Opening the campaign, Sir Kenneth Corfield, chairman of STC, said: "Industry will be greatly helped if we stop ignoring the vast resources of talent which girls can supply to the engineering dimension."

Sir Kenneth was speaking as chairman of the Engineering Industry Training Board released at the same time confirms the need for the Wise 84 campaign. It shows that over 90% of women employed in the engineering industry work in relatively unskilled jobs which are mostly under threat from new technology.

According to Sir Kenneth: "The chief executives of companies, personnel executives and management are key people in our attempts to change attitudes to girls. Opportunities are good in engineering for all young people - and girls must play a part. We need to persuade key management people to come round to our way of thinking."

The aim is to draw attention to career opportunities for women in engineering and other professions.

computer programming she is mainly concerned with writing CAD programs for electronic design applications and helping hardware engineers to use them.

The award, £250 and an inscribed rose bowl, was presented by the chairman of the Equal Opportunities Commission, Baroness Platt of Writtle.

requiring science qualifications, and to create an environment attractive to and supportive of women.

A report from the Engineering Industry Training Board released at the same time confirms the need for the Wise 84 campaign. It shows that over 90% of women employed in the engineering industry work in relatively unskilled jobs which are mostly under threat from new technology.

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The aim is to draw attention to career opportunities for women in engineering and other professions.

## Girl technician award

FRANCES DAGG was chosen last week as girl technician engineer of the year. The award is made to try and persuade more girls to take up a career in electrical and electronic engineering.

Dagg, 23, is a software development engineer at GBC Telecommunications in Coventry. Although her work involves all aspects of

ber 1982.

Corfield says: "We are committed to encouraging more high quality people to enter engineering, and, as part of that campaign, are making special efforts to attract more women engineers."

"We need to change our attitudes towards girls and what they learn in school."

Baroness Platt of Writtle, chairman of the EOC and herself an engineer, said it should be compulsory for girls to study science subjects up to 16. "We have to get away from the idea that science, engineering and technology are the sole province of boys and men."

Secretary of State for Education and Science Sir Keith Joseph says a policy statement will be published later this year on science curricula in schools.

Events already planned as part of Wise 84 include residential courses and careers conventions.



DAGG... Award winner.

## Commodore names new man

by John Kavanagh  
US electronics and microcomputer firm Commodore has named the head of a big industrial company as president and chief executive following the resignation of founder Jack Tramiel.

Tramiel resigned this month for personal reasons, but will stay as a consultant to the company.

The new man is Marshall Smith, an old associate of Commodore chairman Irving Gould. Smith is president of the US end of Thyssen-Bornemisze, one of Europe's biggest industrial companies, which makes nearly everything from bottles to car components.

The US operation had a turnover of \$1,000 million in 1982 - the same as Commodore last

year. Smith is also on the advisory board of merchant bank Manufacturers Hanover Trust.

Gould says Smith has an "excellent reputation" for manufacturing, finance, marketing and motivating people. The two have worked together since 1978, when Thyssen-Bornemisze bought Interpol, a company in which Gould was involved as chairman and shareholder.

Commodore needed a "professional executive" because of its size, says Tramiel. Sales have increased 13-fold in six years since the Pet microcomputer was launched.

US reports suggest some big shareholders were unhappy with Tramiel's autocratic management

But US industry watcher Rosen Research says Smith's main expertise is in manufacturing - an area where Commodore is already strong.

"He looks more of a friend of Irving Gould than someone sought by Commodore," the company says.

Smith's appointment follows a new trend among microcomputer firms to appoint professional managers from outside to top posts as sales rocket.

Last year John Seully moved from president of Pepsi Cola to head Apple, while financial troubleshooter Michael Faherty is considering the top job in Victor Technologies.



GOULD... "Excellent record."

## Frightened analyst blames the planners

by John Riley  
THE European computer industry faces a "frightening" future because there is not enough long-term planning, and too much technology and market driven.

That view, by industry analyst Al Dunn, head of the Yankee Group's European operations, arises from an in-depth study by the company for the European Commission on the future of office automation. The Commission is currently studying the report, which at least for now is for internal use only.

The report is based on a detailed 38-page questionnaire completed by 20 computer companies, combined with general research by the Yankee Group.

"European industry ought to be frightened," says Dunn. "It's got three years to sort itself out, otherwise we might as well all paint ourselves blue."

Commenting that the Community is not stimulating marketing activity he says: "People buy solutions out of technology, and you get solutions through marketing."

Among the recommendations are that there should be a common European communications networking strategy, along the lines of the Japanese industry department's strategy to the year 2010; and that standards committees procedures should be speeded up (see story on page 1).

Each government in Europe should have its own national standards harmonisation committee to make sure each country is in step and a "blueprint" is needed to help users understand their needs and help manufacturers cater for those needs.

The report is also critical of the fragmented European approach and identifies key areas in the office automation field where Europe could unite without conflict, including communications, advanced peripherals, local net-

## NEWS ANALYSIS

# Government sets standards rolling

Last week the government accepted most of the recommendations of a report that it should overhaul its telecomms. Donald Kennett reports

THE country's biggest telecommunications user, the government, is acting on behalf of its fellow users by leading the demand for standards.

Users have often been called on to play a greater part in standards, both by participants in standards committees, who recognise the danger of wandering away from reality, and by academics who have visions of compatible products from a variety of sources being tured into wondrous new services at minimal cost.

Users have been asked to help form the standards in the first place and to demand them in the products they buy. But they reply that they have the time to join in lengthy standards discussions aimed at producing results beyond their planning horizons; they haven't the muscle to influence manufacturers' design decisions; and they cannot afford to wait for the implementation of standard products.

One major effort aimed at breaking this deadlock has been made by the university and research council community, which for several years has had a team working on a rationalised approach to networking between autonomous establishments.

Some of the smaller suppliers have, working from the opposite end of the problem, seen standards as being to their advantage but, perceiving a lack of interest from users, have given a higher priority to other considerations, such as maintaining compatibility with previous products.

The Department of Trade and Industry has already tried to boost information technology standards by setting up the Information Technology Standards Unit to help develop them and the Focus committee to promote them.

It has also encouraged users to influence them by initiating the formation of the Information Technology Users' Standards Association.

But none of these is likely to have as powerful an effect as the £50 million investment programme for the government civil administrative telecommunications network that was announced earlier this month.

Standards are said to be more necessary for the information technology revolution because, unlike the mechanical revolution, it depends on the close interworking of its parts.

Many of the "as yet unimagined services" on which the government tells us, full economic recovery and growth will be based, will only be viable if they are launched into an environment where large amounts of equipment have already been installed for a variety of other purposes. Users will not want to have to install new terminals or processors before they can make use of each new computing or communications service.

Many services will only be launched because the cost of running them is a marginal addition to the cost of existing ones - just as recorded information services have been added to a public telephone network primarily intended for two-way speech.

As far back as Sir Keith Joseph's days as Industry Secretary, the government advocated "enlightened procurement" as an important means of nudging industry in the right direction.

The currently planned nudge of encouragement towards the implementation of standards is not the kind of

involvement complained of by STC chairman Sir Kenneth Corfield in the field of defence procurement, where he says government specifications stifle inventiveness and design ability and lead to over-engineered uncompetitive products.

But pushing standards that have been developed outside government is a different proposition. It is still possible for publicly developed standards to evolve that are irrelevant to users' needs or that are overtaken by proprietary developments that become de facto standards. This is where the need continues for user involvement.

In fact all parties need to work against the tendency to get bogged down in too much detail and against companies that want to slow the progress to match their own development cycles. But there are many areas in which almost any workable standard would be a useful contribution.

Powerful though government procurement is as an aid to industrial development, government funds are limited and this government in particular is keen to transfer as much economic activity as possible out of government hands.

Standards are said to be more necessary for the information technology revolution because, unlike the mechanical revolution, it depends on the close interworking of its parts

The renewal of its telecommunications network provides an opportunity to make savings, at the same time as fostering desirable trends in the industry.

The report from Soys and F International, on which the government civil telecommunications strategy is based, cost £300,000. It has already saved the government £500,000 in the year since it was presented, through the simple suggestion that British Telecom be persuaded to lower its charges for telephone extensions.

Future saving of £15 million a year are to be made by installing automatic exchanges, increasing network capacity and using call logging equipment to keep track of outside calls.

Standards are expected to contribute to saving by making equipment more versatile, and therefore longer lived, but at the same time more readily replaced and therefore more vulnerable to the perils of its supplier.

At the same time, the government is not going to be much ahead of the field in buying information technology standards. Its main telecommunications requirement is for basic voice services and the explosion in its use of more sophisticated information technology is a few years away yet.

The report recommends a schedule for standards requirements that seems pretty leisurely, even in relation to the progress of the standards themselves. It is hard to imagine such a schedule giving a lead to anyone. But lead comes from the fact that

known well in advance.

A lead will also be given by the pilot projects involving various types of advanced technology. Part of the objective of these projects will be to give a clearer indication of which standards will become the most relevant and how soon.

Standards to be required by next year include telephone sockets, push-button dual tone signalling, some modem standards and the X25 physical layer and link layer protocols for access from computers and terminal clusters to packet switched data networks.

Standards for local area network interfaces are also proposed as a requirement for next year, but

videotex and teletex standards are not thought to be required until the year after, despite the fact that videotex services started in 1978 (Presic) and teletex services are to start this year.

The Treasury in its reply to the consultants' report says that individual government departments will continue to be responsible for many of their own purchases and that the CCTA (the government Central Computer and Telecommunications Agency) will continue to manage the main network and set guidelines for purchases.

But the report, and the Treasury's response to it, is likely to be a good guide to what actually happens.



The Treasury leads the way on standards.

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## Disc maker moves to Dublin and diversifies

by Nuala Moran  
THE leading independent supplier of disc and tape storage systems for DEC and Data General minis is diversifying into the Hewlett-Packard market.

Systems Industries of California made this announcement as it opened a 40,000 square foot factory in Dublin last week - its first move into European manufacturing.

The Hewlett-Packard market is to be exploited with the purchase of another Californian company, Qualex Technology, which manufactures tape products for HP3000 and 1000 computers.

All Systems Industries' range of products will be made at the Dublin factory. Harrold Shattuck, president of the company, says that by August most shipments for Europe will go from Dublin.

It will also supply African markets and some parts of Canada. "The tax position is such that there are some cases where it is more economical to ship from Ireland to Toronto than California to Toronto," says Shattuck.

Service and repairs will also be done in Dublin. Some repairs are now carried out at the UK headquarters in Woking, but says Shattuck: "A number of repairs require

complex testing and we can't afford the equipment except in conjunction with a manufacturing facility.

"Previously parts had to be shipped back to the US for repairs so customers should see an improvement in this respect."

Irish people will be trained in California for work in the factory, and in two years' time there will be 90 employees. Shattuck says he will also develop sources of supply in Germany, UK and France for components to complete integrated manufacturing in Europe.

The factory was set up with assistance from the Irish Development Agency. A first decision would have put the factory in Wokingham, Surrey, near the UK headquarters in Woking. But UK managing director David Scaman says that, although this would have been convenient, the financial inducements to go to Ireland swung the decision.

Shattuck says the break into the HP market could take a while to get going. HP supplies the majority of the market for storage products for its minis, whereas DEC only has around 50% of the market for its minis. The move into the HP market is only part of

## Oric updates home machine to cut the quirks

by Philip Hunter  
ORIC Products last week began full production of a successor to its Oric 1 home computer.

The new machine, called Atmos, comes with a new operating system, following six months R&D in collaboration with some of Oric's third party software suppliers.

"We have greatly improved the ROM and removed all its quirks," says Paul Johnson, Oric director of R&D.

Atmos also has a machine code program to enable the user to override the error checking facility when loading programs from cassette. Oric claims to be first with this facility.

Oric has developed a 3in micro disc drive for the Atmos, based on the Hitachi drive and giving up to 320Kbytes storage at an extra cost of £200. The micro itself costs £170.

Oric says it delivered 160,000 micros in 1983 but will find it difficult to repeat this figure this year, because there are more competitors.



## COMPANY NEWS



DONNELLY... To head Dyadic.

## Terminal maker buys APL house

LYNWOOD, an intelligent terminal manufacturer, has bought specialist APL systems house Dyadic Systems for an undisclosed sum.

Hector Brown, Lynwood managing director, says the nature of the deal makes it difficult to quantify at the moment, but it was less than £500,000.

Brown says the move "adds considerably to our in-house software team". Dyadic, formed six years ago, will operate as a wholly-owned subsidiary headed by Peter Donnelly, Dyadic Systems operations manager, and it will keep its name.

Dyadic's product is an APL interpreter, Dyalog. It was developed with a £146,000 grant from the National Computing Centre.

## Profits at Rascal creep up

THE UK electronics sector has started 1984 as nervously as it ended 1983, with interim results from Rascal and Thorn-EMI getting a mixed reception.

In the six months to October 14, Rascal's pre-tax profits rose 6.6% to £50.056 million on turnover up 7.3% to £365.2 million. The company was helped by interest receivable but it suffered heavy exchange losses of £1.32 million, so taxable profits improved only £1.2 million to £48.7 million.

In a pugnacious performance, Sir Ernest Harrison, chairman and chief executive of the company, was able to sugar the pill by announcing defence radar contracts worth £57 million. The orders were won by Rascal Radar Defence Systems, and are for advanced radar electronic warfare equipment for the Royal Navy and an overseas navy, and surveillance radar and command links for the Rapier air defence system.

But Harrison admits a dearth of orders for its tactical

radio group from countries hit by the fall in demand for radio - which will produce a shortfall on sales this year of about £40 million. It highlights Rascal's dependence on Middle East business.

On the bright side, Harrison insisted that Rascal Milgo's problems in Miami, which have plagued the group for so long, are at last behind it.

Pre-tax profits for the data communications division should be up 40%, and it will be the major contributor to group sales.

Harrison said Rascal now had a far broader base than previously. Its cellular radio business is "one of the most exciting things to happen to Rascal" and though its losses will rise to £12 million in 1984/5, Rascal expects a profit of £8 million in the year after.

Harrison says: "In this financial year profit growth will be modest," but Rascal is aiming for sales of £1 billion for the first time in 1984/5.

Analysts had been looking for



HARRISON... Pugnacious performance.

about £50 million pre-tax at half-time and Rascal's long ailing share price firmed 5p to 208 pence in a sign of relief that things had been no worse. But estimates of up to £135 million for the full year now look optimistic and have been downgraded to £120 million.

But no such luck for Thorn-EMI. It doubled profits before tax from £27.6 million to £55.8 million in the six months to September 30, but its shares fell 25p.

Not only has the company fallen short of the City's best guesses - analysts had looked for at least £60 million - but Thorn directors point out that the results, although a "significant improvement" must be set against a poor first half in 1982. Total sales were up £130 million to £1.3 billion.

Thorn's best performer was its consumer durable division, with strong trading in all areas of television rental and sales.

## NCR makes centenary record profit

NCR has marked its 100th anniversary with record financial results. Net profits in its fourth quarter rose 22% to \$114.4 million, on turnover up 7% at \$1.19 billion. This brought net profit and turnover for the year to \$284 million and \$3.730 billion respectively.

Company president and chief executive officer Charles Eitel says incoming orders are substantially up in the fourth quarter. "NCR begins 1984 in the strongest financial position in recent company history".

## Honeywell up

ANOTHER venerable member of the bunch, Honeywell, has reported modest progress in 1983. Net profits for the year were \$231.2 million on turnover up 5% at \$5.75 billion. The company says its computer divisions have improved sharply. But growth slowed in the final quarter with profits ahead 4.4% at \$91.9 million on turnover up 3.8% at \$1.63 billion.

## Gould close look

THE world is that General Electric is taking a close look at Gould as a possible acquisition. Gould is playing the innocent and says it is unaware of any reason for the interest in its stock in the last few weeks other than its improving business outlook.

## Micro sponsor

BROKER Simon & Coates which has made quite a reputation as a sponsor of new issues on the London Securities Market - Allen Business Systems, Memory Computer and Real Time Control among them - is set to introduce Micro-Circuit Technology, which builds printed circuit boards, by way of a tender within the month.

## Software holding

INVESTORS in industry, or if you prefer, in Dillon Technology, an Irish software company based in Cork, through its subsidiary Investors in Industry Ireland (41%), Dillon will produce business applications for microcomputers, and has set up a sales and support office in Maidenhead.

## Call to buy

MANCHESTER broker Henry Cooke, Lumsden, is recommending commodity and future service company Rolfe & Nolan Computer Services as a strong buy. It points out that volumes in world futures markets are expanding rapidly, and looks for Rolfe & Nolan to return a profit of £500,000 against £321,000 last time.

The company started selling chips at the end of 1981, although it has been making them for its own use since 1967. It attracted widespread attention in 1982 when it launched the first 32-bit processor chip set on the market.

But the microprocessor chips make up only 10% of its output. The biggest proportion, 40%, is from ROMs, which go to makers of small computers and home computers for operating software and games cartridges.

The fastest growing sector is non-volatile RAMs (which have a single power supply voltage and normal RAM read-write cycle times, but which hold their contents without battery back-up when the power is switched off).

## Televideo \$22m

TELEVIDEO Systems Inc. of Sunnyvale, California, has reported profits up 51% at \$5.8 million on turnover ahead 40% at \$43.6 million for its fourth quarter ended October 31. So for the year profits rose 76% to \$22.4 million on turnover up 71% at \$168.8 million. Chairman Philip Huang says 1984 should be even better, when the company will benefit from sales of its new hard disc personal computer, the Tele-XT, and its TPC-II portable micro.

## MICRO NEWS

## Super Mac kicks off

THIS week sees the worldwide launch of Apple's Macintosh, the product that will either confirm Apple as the innovative star among micro makers, or will brand it as a single success company. Robert Parry went to California to talk to Apple about what Macintosh means to the company.

"OCCASIONALLY products come out that are breakthrough products. We feel this is one." Steve Jobs, founder and chairman of Apple, has a high opinion of his new baby, Macintosh, and has a lot riding on its success.

"A lot of Macintosh is Apple getting back to its roots. With Mac we will bring personal computing to millions of people that current generation PCs don't reach. Its price/performance point will bring it to individuals, not just corporations. I want to make Macintosh the third milestone product."

Jobs' milestone products are the Apple II that got the whole microcomputer game going in 1977; IBM's Personal Computer that in 1982 made the game respectable for real computer companies to play; and Macintosh, this week's new arrival at the bottom end of a revamped Apple Lisa line,

which in Apple's view will set a second standard for micro makers to aim at.

The story is that IBM now has the traditional 16-bit business micro market sewn up. It has already put an indelible stamp on the type of box most manufacturers are churning out for this market, and is set to dominate in sales.

"But people do not want just a single standard," says Jobs. "Apple is best placed to be the second standard. Apple will be a \$10 billion company by the end of the '90s if we are successful in this."

Apple president and chief executive John Sculley takes up the tale: "With Macintosh we are saying 'Sure, the PC is only seven years old, but why shouldn't we go out and define it again - as we did with the Apple II?' We have a unique opportunity. No one is

close, within a couple of years, of the price/performance capability of Macintosh."

Sculley is almost evangelical about Macintosh and its part in the scheme of things. "Macintosh's success is important for the industry, otherwise what PCs are capable of is fixed."

"We don't see anyone else in the industry trying to turn out innovative products like Apple and Macintosh."

Software to fit the machine to the customers - and Apple is aiming for the 95% of the potential PC business that so far is not reached by any supplier - will come predominantly from outside Apple. Already big names in the software industry like Bill Gates of Microsoft and Mitch Kapor of Lotus have lent their names and photos to Apple's Macintosh software advertising.

Apple's line is that software developers agree that Macintosh is where the action will be, and are feverishly porting applications.

Jobs says that Bill Gates told an Apple dealer meeting that half of Microsoft's 1984 revenue will come from Macintosh software. That either says a lot about Macintosh, or about Microsoft's future relations with IBM.

Macintosh was designed from the start to be built in millions.

Jobs says Apple spent \$20 million designing the machines to build Macintosh and setting up the line in Fremont, California - overlooking the Ford and General Motors plants. Other plants will follow.

"By March we will be building a Macintosh every 27 seconds," claims Jobs.

He reckons that Macintosh sales will be supply-limited for the first six to nine months, but production should hit 4,000 a month by the end of the year.

"It will be the first product to get this high this fast," he says. The aim is to break the million barrier in three years. Apple II took six.

But despite all the noise about Macintosh and the new Lisas, do not forget the Apple II. "People will be surprised at how much we will do with Apple II in 1984," says Sculley. "It will be a major product for the rest of the decade. Keep your eye on it - we're not going to walk away from the Apple II."



JOBS with Macintosh (insert)... "First product to get this high this fast."

## SHARES TABLE

The shares table, which is specially compiled for Computer Weekly, shows selected computer companies that reflect the state of the computer industry.

Previous published index 138.83 Index 132.02 Change +2.18

Pence		London Stock Exchange		Pence		\$		US Stock		Change +2.1%			
1984		Stock		1984		1984		Stock		Price		Change	
High	Low			Price	Change	High	Low			Price	Change		
378	350	Abn-poworth (100)		318	+ 4	24 1/2	23 1/2	Amul		29 1/2			
330	330	ACT Agri Comp (250)		318	+ 4	24 1/2	23 1/2	Amul		29 1/2			
60	60	Admiral (100)		177	+ 1	13 1/2	12 1/2	Amul		29 1/2			
70	68	B Bovee (250)		177	+ 1	13 1/2	12 1/2	Auto Data		28 1/2			
144	140	Chubb (100)		177	+ 1	13 1/2	12 1/2	Auto Data		28 1/2			
144	140	Chubb (100)		177	+ 1	13 1/2	12 1/2	Auto Data		28 1/2			
260	260	Coca Cola (100)		140	- 2	21	20	Comp Auto		30			
260	260	Coca Cola (100)		140	- 2	21	20	Comp Auto		30			
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180	180	De La Rue (250)		260	+ 10	15 1/2	14 1/2	Consolidated		11 1/2			
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## SOFTWARE FILE

## Wang offers aid to software houses

Wang's word processor and mini-maker Wang is to give a helping hand to a few small applications software houses.

It is drawing up a list of recommended developers for specific markets, beginning with manufacturing. The three named in this category are Intel, Hill Price Harrison and Peat Marwick Mitchell. Others are soon to be named for banking and insurance and these are likely to include Balford Management Services.

The idea is to formalise Wang's long-standing habit of calling in experts in vertical markets whenever a customer asks for a specialised program.

Industry marketing manager Gary Lowrey hopes that this approach may also assist in getting people to think of Wang as a data processing firm, as well as leader in word processing.

"Even the strongest IBM supporters can't see a clear office automation strategy there," says Lowrey.

In the longer-term, Wang is also



LOWREY... "Even the strongest IBM supporters can't see a clear office automation strategy there."

on the lookout for software houses in law, transport, energy and construction.

"We don't think it would make any sense for us to establish an in-house software group to tackle these things," says Lowrey, "so we've picked out mainly those

houses that we've worked with in the past, and will recommend them to our customers."

Pacted has worked with Wang on some projects for Ford; Balford set up a purchasing system for Mobil which it is now marketing. After the recommended list is

finalised in June, Lowrey wants to work on setting up deals with some larger software houses and on a "customer cross-licensing programme."

This would allow British software houses to sell programs developed for Wang abroad.

## ICL leads attack on the villains

by John Kavanagh

LEADING UK computing firms and government agencies are aiming to develop a £50 device which could become a world standard solution to the problem of mini and micro software piracy.

The government's British Technology Group and 10 companies led by ICL are working with the National Physical Laboratory to develop a tamper-proof box of electronics which will decipher and run programs sold on disc or tape in encrypted form. A single box would be able to run all software following the encryption rules.

A preliminary meeting was held last autumn and at a second meeting this month six firms put up £5,000 each and letters of intent were received from several others. The group is looking for 10 member companies to pay half the £100,000 one-year budget for development of a prototype. The British Technology Group and the National Physical Laboratory are putting up the rest.

"The members are blue-chip companies, including some big software firms," says Dr Brian Wichmann, who is co-ordinating the work from the National Physical Laboratory.

Wichmann says the group knows of no similar collaborative work anywhere. The group is keeping the US computing services industry and the European Commission in touch with its progress.

"Our aim is to help the UK industry — but it's essential that our work is accepted internationally so that exports of UK software are not impaired by the need to have the device," Wichmann says.

He points to studies which estimate that between £30 million and £50 million a year is being lost through software piracy in the UK alone.

The £5,000 membership fee has kept out smaller software firms — but the results will be publicly available, so large numbers of suppliers can use the new solution. The group is now completing a study of existing software protection methods to ensure there are no other suitable devices or techniques already available.

Dr David Everett, managing director of Open Computer Security, which will build the prototype, says all other methods are "a joke".

"We must press ahead as quickly as possible, otherwise a de facto standard such as a silly dongle could appear because people are so desperate for some form of protection," he says.

A dongle is a hardware device provided with the software. The program only runs if it is there. But pirates can delete the checking routine or add one which simulates the dongle.

Other systems use encrypted program code — but run the deciphered version in the computer's memory, where it can be copied.

## SOFTWARE FILE

## Anti-piracy costs threaten products

MANY good software products are not reaching the market because of the high cost of protecting them against piracy, according to an industry pundit speaking at a British Computer Society meeting last week.

Jon Baldachin, former consultant to the BBC Computer Programme, is head of software house Little Genius and has spent the last four years devising an answer to the threat of bit-copiers.

Baldachin said that hardware solutions such as the dongle were only useful for products sold at over £50 each. For cheaper programs, they added prohibitively to the cost of production.

As software prices kept falling, more and more attention was being given to techniques like non-standard disc formats. But good bit-copiers like Locksmith had successfully overcome many of the problems of such clever formatting.

Because of the cost of dongles,

firms like VisiCalc had decided to go into non-standard disc formatting in 1980. Since then, there had been a continuous war between program developers and pirates over track/sector recognition. Locksmith, he said, was powerful and sophisticated at recognising these patterns, and there was no legal recourse against the people who sold it.

But he said there were limits to the mechanical intelligence that could be built into a bit-copier. "So far we think we're ahead of the game," he said.

The piracy problem is more severe in the US because the UK had more mature distribution channels. Big distributors like Boots or Debenhams would drop a product as soon as there was any hint of litigation.

But the US is about a year behind us in this respect and still depends heavily on mail order, which is vulnerable to pirates, he said.

## Micro links delayed

BIG software firms are having trouble living up to their promise of getting mainframes talking to micros.

Cullinet, which promised delivery of its IDMS/R in the fourth quarter of last year, is now talking of installing it here in test versions by the end of January and putting it on general sale by the end of June.

Informatics and Visicorp, which are combining to provide two new products called AnswerDB and Vialanser, are also behind schedule. They also promised their solution for the fourth quarter, but now say it is due for release this week. They say it has already been made available in the US, though there are no buyers as yet.

McComaek and Dodge claims it is still on target to release its millenium product in the spring.

Now there is a new challenger in the market, Martin Marietta,

owner of Hoskyns and Mathematica. Its IT software has been put together by Martin Marietta Data Systems in New Jersey from research which was being undertaken by Mathematica before the \$30 million takeover last summer.

Marietta vice-president Norm Agin in London recently said they already had several US users including San Diego Gas and Electric.

The system is to be extended over the next few months with connections between Mathematica's Ramis-11 database and the IBM-PC.

Principal distributor to the corporations will be Hoskyns, but Marietta is looking for other channels to reach the smaller organisations.

Agin claimed there was no threat from IBM following that company's announcement that it was to develop Comshare's Wizard decision support system.



TERRY and CAROL POOLE... Moving to Salisbury.

## Coal money warms Tabs into management shake-up

MICRO accounting software house Tabs has been given a cash injection of over £500,000 from the National Coal Board pension fund and bankers Hambros.

The equity finance has enabled the firm to shake up its management team and bring its staff from offices at Andover and Ringwood under a single roof in Salisbury.

Two directors, Rab Kilpatrick and Chris Rogers, have left and been replaced by four new ones. The recruits are former Marel managing director Mike Lunch, former Tab's dealer Richard Rance, former Hooleywell man David Hayward and Nick Griffin from accountants Peat, Marwick, Mitchell.

Tab's managing director Terry Poole says he is also looking for eight more high-calibre pro-

grammers to add to his existing staff of 50.

Kilpatrick left to return to Quest Automation, while Chris Rogers has gone to the US to represent Tabs' interests.

The investment is intended to back development of its multi-user product range Superstats and expansion of its franchise chain of business centres.

Tab's broke new ground for the industry by being first to sell its goods via colour supplements and was among the first to use phone selling. In 1982, Hambros took a 15% stake in Tabs for £150,000.

Poole says that the decision to move to Salisbury is based largely on the cheapness of premises there. It would cost them about £50,000 a year less than going to Newbury, he says.



AGIN... "No threat from IBM."

Software File is compiled by George Black

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## GEC plans for tools subsidiary

GEC's new software tools subsidiary will be oriented towards developing Ada tools on the DEC Vax-11/780 and Unix tools on the new GEC Series 63 hardware.

Both elements could be underpinned by public money, through the Alvey Programme or other government initiatives. The company, based in London's Covent Garden, is the brainchild of GEC director Laurence Clarke — now seconded to the Alvey directorate — and Derek Rubens, who will be its chairman.

The aim is to recruit around 50 top-level staff by April 1985 and to sell the tools both to other GEC wings and on the open international market.

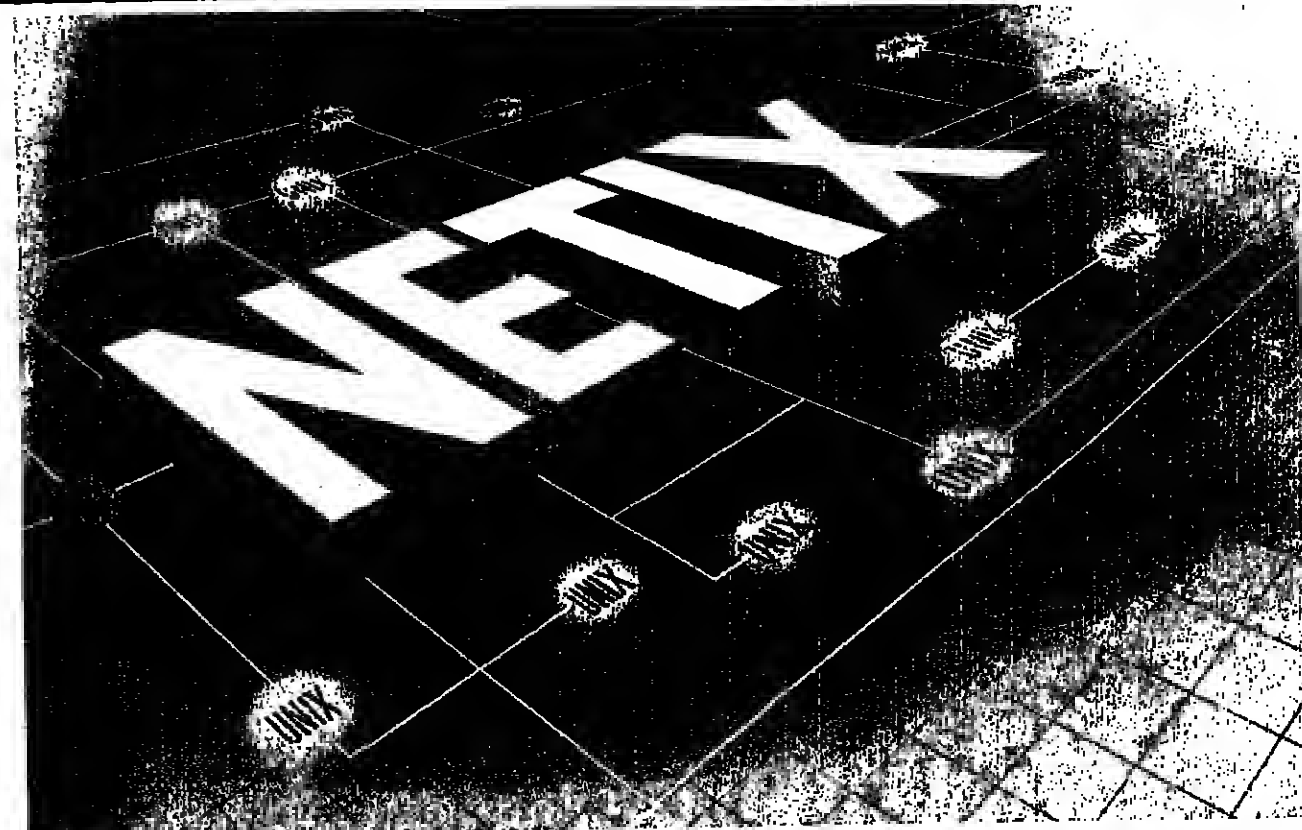
Roberts will report through

GEC director Jack Pateman to group chairman Lord Westminster. But he will be anxious to convince programmers that his is really a small, autonomous outfit, not just a part of a huge conglomerate.

Technical director Tony Callaway says that being able to attract the right recruits will be the key factor in whether they succeed or not. The number of skilled Ada practitioners in the UK runs to only a few hundred and for Unix the figure is still only a few thousands. Callaway says he will not be trying to poach any of the existing 3,000 software engineers at GEC. They will need their bosses' agreement to move to GEC Software.



CALLAWAY... Attracting the right recruits will be the key factor.



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Enclosure

Enclosure



# \$50 start has earned Hwang a fortune

SUCCESS was slow coming to Philip Hwang, 47-year-old founder and chairman of Teleview Systems. But it came big. In 1984 when he arrived in the US from South Korea, he had \$50 in his wallet. Eleven years later he had amassed the modest personal fortune of \$9,000, which he used to set up Teleview in partnership with two other engineers.

The venture spluttered along unprofitably for a couple of years, and the two other shareholders pulled out, fed-up with being forever broke left. Hwang struck out, and look where he has got him.

At the latest count he is worth \$628 million, and is listed as one of the 400 richest men in the US. Yet for his first 13 years in the US, plus his 10 years in South Korea as a North Korean expatriate, he was a financial also-ran.

Hwang's first move on arrival in the US was to enrol for a mathematics degree at Wayne State University in Detroit. Then on to Harvard Business School in the hope of learning how to make money.

With no rich parents to keep his pockets full, he had to work as a waiter in restaurants at night to pay his course fees and buy his daily bread.

After this, he worked at Burroughs and NCR as a hardware engineer, and managed to put aside \$9,000 to meet his dream of

starting his own company, which in 1975 he did.

But for several years, Teleview looked like being just another small time electronics company. So how did he make it?

Hwang makes it sound as simple as sucking eggs, and a great deal more rewarding. In 1979, Teleview started selling display terminals more cheaply than most other companies, just when demand for them was rocketing. Hwang went home to Korea to negotiate cheap

by Philip Hunter

manufacturing deals, which enabled him to undercut much of the opposition.

But he is quite unsentimental about his country, and has now removed much of the manufacturing to Sunnyvale, California. Keeping the Koreans on only for labour intensive parts of the assembly.

"All high technology engineering and quality control is now in Sunnyvale," Hwang assures us. And the company is also planning to manufacture in Puerto Rico.

The man cruminate a disarming patience, giving the expression that what cannot be done today, can quite happily be left until the day after tomorrow.

This attitude certainly helped to see him through the hard years of 1975 and 1976, when he says he never had a single pay cheque and

lived off his wife's salary.

Hwang also attributes his success in part to a severe reluctance to borrow money, so he is a glowing exponent of the spirit of Kaigonomics, if not to the practice.

It was not until 1982, that he borrowed any money at all for his business, and then only a \$5 million debenture loan, just to ease change in comparison with his company's turnover, which was now colossal.

Hwang says he is also reluctant to part with what he has got, in this case a 70% shareholding in Teleview. For several years, he owned almost all of the company, but has now shared 10% among his 1,000 employees, and in March last year went public to raise \$125 million.

More money was raised in November last year in a rights issue, but Hwang still has his 70%.

Teleview's move from video games into TV monitors in 1978 launched the explosive growth, but it has been personal computers that have sustained it over the last two years.

The company's computer division, started in 1981, now accounts for over half the overall turnover. Now, just 30 years after Hwang escaped from North to South Korea during the Korean war, he has come to the UK to initiate what he considers a vital step in making his company a major force in Europe.

This is to appoint Thorn EMI as the exclusive UK and Eire dealer.

"Until now we have never given anyone exclusive territory like this," Hwang says. Hwang believes in local competition between distributors, but not being one to let his prejudices overcome his business nose, he decided to drop the three existing UK distributors, Midletron, Encotel and Colt Computers, from the computer side of Teleview's operation.

They will be retained, however, for terminal distribution. Hwang says that he wanted to have a name bigger in the UK than Teleview itself behind the product, and that Thorn EMI was an ideal choice since it also had plenty to offer on software. But another reason is almost certainly Teleview's poor market penetration in the UK, compared with the great inroads it has made into American personal computing market.

Not that everyone attributes this poor performance in the UK market to the three former distributors. BCU Computers, formerly a dealer selling Teleview's TS range of desk top micros for Midletron, blames Teleview itself.

"The main problem is that its operating system is not up-to-date," says a spokesman.

Now, however, Teleview has a new desk top model due for release in the UK next month, the TS1605. This offers full IBM-PC-



HWANG... From Korean rags to riches.

DOS compatibility at £2,600 a system.

Hwang places great store on this new computer's PC-DOS compatibility, and admits that previous models which only ran the more general MS-DOS programs were not truly IBM-compatible. "The 1605 is almost 100% IBM-compatible," he claims.

Turnover for 1983 at least \$350 million, Hwang asserts.

Hwang's vision of Teleview as the complete systems company should be fulfilled during 1984, he thinks. The company now has an extensive range of business applications software, and also makes printers as well as terminals and displays.

Financial Times

## ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, January 26, 1984

### This co-operation may set standards

THE threat from US and Japanese competition in information technology has been brought home increasingly as major European companies have started to form ties with US and Japanese firms in preference to each other.

Protectionism is being discredited increasingly in general markets. Even in telecommunications, one of its last bastions, it is coming under fire.

Open markets, it is said, benefit users by bringing them the widest possible choice of products (so long as the country can afford the imports), and manufacturers by bringing them the stimulus of competition (so long as it doesn't put them out of business).

The problem is to balance the benefits and the dangers from such a shift in policy. Manufacturers must enlarge their markets as users widen their choices. Companies must be prepared for future opportunities, but not killed off by removing their current ones. Markets must be opened multilaterally, partners must prove to be fair-minded and trustworthy. Opportunities must be made real and not just apparent.

Part of the solution must come from manufacturers. This month has seen them told by a US consultancy, the Yankee Group, in an internal report to the European Commission, that their long-term planning and their marketing efforts are inadequate.

Part of the solution must come from government. This month has seen the US accused of trying to control exports of high technology, and the UK government challenged to do something about it.

Some solutions must evolve in a wider arena. This month has seen a new challenge to the government's Telecommunications Bill arise from the opposite side of the fence from the previous one: fear of too little competition is voiced to match the previous fear of too much.

Perhaps the most positive step is the one taken by CEPT on European standards. Standards seem to be a fairly safe area for co-operation. It was not always so. Standards have seen some fierce rivalries. But there are less likely to be such rivalries now, and this is one area in which the participants will feel little need to police each other.

With any luck, as well as bringing benefits directly, this co-operation on standards will set the tone for further co-operative efforts.

### Save manufacturing

THERE is a hint that there is some debate within the Department of Trade and Industry over whether service industries — and one is particularly thinking of those related to the new technologies — will really be the salvation of the UK economy.

Information Technology Minister Kenneth Baker, speaking at the London Business School last week, repeated the government's view that most new jobs over the next 25 years would be created in service industries.

There seems to be some disagreement with a speech made earlier this month by industry under-secretary John Butcher, who said that information technology would not change working patterns, would not herald in the age of leisure, and that it was "foolish and misguided" to say so.

To be fair, the "disagreement" between Butcher and Baker may be more imagined than real. And also to be fair, Baker did say in his remarks that he could not envisage the UK economy without a large element of manufacturing employment.

The point is, it is all too easy to let the words "information technology" and "services industry" slide off one's lips with the promise that a new day is coming. Services industries will create new jobs, but only if there is a stable manufacturing industry as a base.

If there is no real disagreement between Butcher and Baker, perhaps there should be. Perhaps it is time for a much wider debate in the DoTI, and government as a whole.

### 1984 and all that...

THIS week's example of the strange things people say about computers was sent in by J. Carr, of Reading, Berks, who wins £5. On the last few lists, the weather in three two Californian cities (Los Angeles and San Francisco) has been given as "sunny". At 4 am (local time).

A useful met officer admitted: "These observations are compiled by computer and it can't differentiate between night and day. And our programmers can't do anything about it."

## LETTERS

### Ludicrous laws victimise technology companies

BRIAN ASH of Arrow Computer Systems ("Arrow" boss urges faster cashflow.) Computer Weekly, January 5) raises some interesting points which affect the whole small business scene.

His comments about small company failures due to under-capitalisation are right on the ball. But small high technology companies are generally under-capitalised for two reasons.

On the one hand, the founders have very little idea of how to go about developing a company or raising the money — or even how much money they are going to need. On the other hand the investment community, with one or two honourable exceptions, is

not geared to funding small fast-growing businesses and knows nothing of the technology involved.

Even where they use technical advisers they usually come from the "big is beautiful" brigade. How can an ex-IBM mainframe salesman really be expected to give a view on the needs of a microsoftware house?

We have terrible trouble persuading people who come to us for help in finding finance that they need to raise more money than they ever dreamed was necessary and that they will need more every couple of years. It is much harder to make them understand that investors actually want a sensible amount of equity for putting the money in.

As for raising another important point on credit control. Most small firms have neither the knowledge nor the time to really control their debtors, but the laxness of our laws on debt make everyone's job the harder. It is so easy to lie a crook that the wonder is more not this why factoring and debt insurance is so expensive unless you have a blue chip customer list.

Because of our ludicrous company laws people can string out a debt until it is worthless, issuing cheques that will never be honoured, getting the courts to allow extended payment, taking everyone for a ride.

The smaller company falls main victim because it has not the resources to chase a debt to the limit. If the law were tight and the penalty severe then the credit control industry would find it economic to service small companies.

Sadly, as Ash so rightly says, this government sees a small company as one which all our western competitors class as medium-sized. Truly small business does not get a look in.

Perhaps too much of the party funds come from these rather larger companies that do enjoy the benefits aimed at small business.

PETER K. MINTON  
Financial Counsellors  
London W1.

### Tebbit look-alike

OUR club members would like to know whether the picture of Norman Tebbit on the front of Computer Weekly (January 5), is the real thing or is, as we suspect, a Taiwan look-alike?

JOHN DALE  
Secretary  
Newtown & District  
Computer Club  
Newtown  
Powys.  
It was the real Norman Tebbit — Editor.

### Market leadership claim for MICA

IAN TRAIL, (Computer Weekly, January 5) takes us to task for our claim that MICA — Microdata's Major Incident Computer Application — is two years ahead of any comparable product.

MICA is a lot more than just a word or text retrieval system. It is a fully featured specialist package developed with the active involvement of serving officers in the West Yorkshire Metropolitan Police Force whose experience of

major crime investigation is second to none. It has received the approbation of the Association of Chief Police Officers, and meets all Home Office standards so far published.

Technically our features include compatibility with manual incident room standardised administrative procedures as well as with Autoindex, plus an option of communications links to various other manufacturers products.

Anyone who wishes to challenge our market leadership must show an equivalent level of acceptance as well as match us feature for feature. That's what we would call a "comparable product" and that's why I think our estimate is a perfectly reasonable one.

BEN GARNER  
Communications Manager  
Microdata Information Systems  
Hemel Hempstead  
Herts.

# The software behind our software



As the pace of development in computer technology quickens, it's all too easy to be blinded by glib claims and slick talk when looking for an effective, efficient computerised human resource management system.

So it may be reassuring to hear that Peterborough Software's Unipersonnel, Unipay and Unipension packages rely very strongly on the most sophisticated, flexible and productive software available.

This unique feature? People. At Peterborough Software we don't just put our faith in technical expertise, innovation and considerable experience in producing management software.

Sales. We won't sell you products you don't need. Rather, to ensure that our customers get just what they need, we back all of that with the right people.

Take the first of the people you're likely to meet from Peterborough Software, a member of the sales team. Rather than setting out to sell you something, come what may, you'll find that our sales people will be more interested in discovering your problems, and ascertaining whether our software packages will in fact do the job for you.

Generally, we find that Unipersonnel, Unipay and Unipension more than meet most human resource management needs. Because our policy of continuous, innovative development of management software for IBM mainframe users ensures that our products keep us — and our customers — one step ahead.

Which of course relies again on people — our team of systems analysts, programmers and engineers. If you find yourself taking a serious interest in our range of software (which we're confident you will), we'll invite you to a Product Workshop.

Where you'll get the chance to roll your sleeves up, and find out for yourself just what you'll get from Unipersonnel, Unipay and Unipension.

And have your questions answered and problems resolved by friendly, helpful specialists. Another group of Peterborough Software people you'll find invaluable is our Education Department. Their function is to ensure that you, your staff and your user department colleagues know what you need at the appropriate levels to make best use of Unipersonnel, Unipay and Unipension.

Once you've installed any one of our products (and again, we're confident that you're likely to), there's yet another team of people available to help you get the most out of your system.

Education. We'll teach you how to get the most from our products. Even in the best of all possible worlds, sometimes things will go wrong. Which is why our Customer Support Team is on call to you.

If you have a problem, you call us. And our people will help you solve it. Human resource management is all about people. So doesn't it make sense that the system you use bases its strength on people too?

Unipersonnel, Unipay and Unipension. Only from the Peterborough Software people. To find out more, complete the coupon or telephone Jane Lewis on (0733) 41010.



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Customer support. Our trouble-shooting service, on call to you.

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## PLATFORM

### IBM's blessing is not final say



David Addison is president of Master Systems International.

A FASCINATING thing about this industry is that if IBM doesn't bless a particular technology, it doesn't merit serious attention.

The big blue seal of approval has more to do with its own marketing needs than the frontiers of research. Yet the most sophisticated of users shy away from viable developments unless IBM advises them that this is the direction they ought to take.

Take the long-term need to solve the problem of online storage demand. This is estimated to be growing at an annual rate of up to 70%. If things keep up as they are — just imagine the implications of millions of corporate personal computers linked to mainframes — most major users face data management problems on a massive scale.

The IBM solution so far is more and more disc drives. And why not, when you are selling 3380s at the rate of \$1 billion a year in Europe, and your growth rate projections could be as high as 40-50% per annum?

Why look to new frontiers when you have a lot of products to sell and the market appears to have very little limit?

This inclines me to believe that any announcement on double density disc drives will be later rather than sooner. Some industry pundits have talked about the possibility of news of this development in the first quarter of 84. The smart money is on the fourth quarter of this year after IBM has had an opportunity to unload some highly profitable inventory.

David Addison

## DOWNTIME

### An education at Rita

AMONG the glittering elite at this year's Rita Awards dinner at the Grand Hotel in Birmingham was a man who had twice been in jail, and who admitted to be the perpetrator of a long running fraud involving the Inland Revenue.

Libel laws, of course, prevent me from naming the individual, but I can reveal that he was at one of the three top tables at the Rita dinner, and only one table away from Alvey supreme Brian Oakley.

The man in question works at one of our leading universities. He admitted to me over our post-prandial drinks that even as a youth he had a hankering for crime: he always carried a thief's housebreaking tool kit with him, not to use, but to tempt the police to pick him up. "They did once, and then got bored with me."

His fraud against the taxman is more subtle. Every now and again he sends a random cheque to the tax office for a small amount, say £10.23, or £6.40. The strategy so confuses the tax people, and their computer, that he has avoided paying a tax bill for many years.

"Most people in data processing are dishonest by nature," he confessed.

### Reversing your chips

THERE is a nice distinction between official second sources of semiconductor products, which are given the specifications to copy quite legally and openly, and unofficial second sources, which develop the product by making use of the process known by the

euphemism "reverac engineering". Intel has accused Nippon Electric Company of Japan of reverse engineering its 8086 16-bit processor family for many moons now, and baa at last reached a settlement.

Telfords and Washingtons, Kilbride and Cwmbrana, even Welshes in the Development Agency. Can we presume there's a Livingston?

Chad

### On the slippery slope

DO hieeps — you know, those damn gadgets that call doctors from the pish to the operating theatre — tend to freeze up.

I only ask, because the other day a pal of mine wanted a word with Lord Orr-Ewing, who, it being January, was of course on the ski slopes of Switzerland.

Should have been no bother, he thought, to get him dragged to a phone for a chat — what with him being a director of one of the Air Call companies. Not a bit of it. My friend had to wait till it got dark and His Lordship came in.

Maybe he switched it off to keep the media at bay.

### 10 YEARS AGO

FROM COMPUTER WEEKLY OF JANUARY 24, 1974: Selco resigned from the Software House Association, leaving the organisation with problems... GEC won a £14,000 order from the Britlab Aircraft Corporation for its 2050 remote job-entry terminal.

### PUZZLER

1,234: this number is written in a higher base than the conventional 10. In fact, it represents the decimal number 7,642. What base has been used? See page 79 for solution.

## Liveware File

by Don





## PEOPLE



■ Bill Evans is now heading operations for CPI, part of the Jenrick group of staff recruitment companies, dealing with national and international organisations. Evans previously spent over seven years in recruitment of high-level computer personnel with another leading consultancy.

■ As part of its drive to increase penetration of UK information systems markets, Ericsson Information Systems has formed a market communications unit. Head of the new unit is Sheila Rao (below), who recently joined the company as marketing communications manager. Rao assumes total responsibility for the co-ordination, planning and management of all promotional activities, including advertising, press and public relations and internal communications.



■ Rair has appointed Mike Langley (above) as finance director. He will be responsible for the financial management of the UK company, as well as Rair's subsidiaries in France and Germany, and the USA. Langley was formerly European controller of the Boston-based Reece corporation, where he was responsible for finance and administration for the Corporation's European subsidiaries.

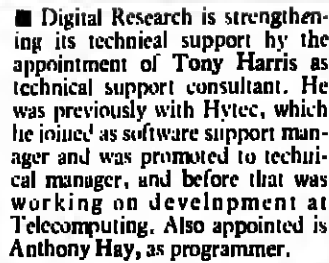
■ The board of NMW Computers announces that Nigel F. Bailester, marketing director since 1976, is now managing director following the retirement from active business of Brian D. Johnson, who has been managing director of NMW Computers since the company was founded in 1972.



■ Ray Gent (above) has been appointed director, manufacturing operations, of Beckman Instruments. He was previously plant manager at Beckman's Glenrothes manufacturing operation.

■ Chris Pullen has been appointed marketing executive by ABS Computers. Prior to joining ABS, he spent two years as a management trainee with Trafalgar House, ABS parent company.

■ Geac Computers Europe announces the appointment of Paul Field as international banking product group manager. He was sales manager at Tymshare, with responsibility for the international banking system.



■ Digital Research is strengthening its technical support by the appointment of Tony Harris as technical support consultant. He was previously with Hytec, which he joined as software support manager and was promoted to technical manager, and before that was working on development at Telecomputing. Also appointed is Anthony Hay, as programmer.



■ Geoffrey Salkeld (above), former vice-president and general manager of Computer Automation inc, of Irvine, California, has been appointed president of Dylon, the designer and manufacturer of magnetic tape systems and controllers. Salkeld has also joined the board of directors of Dibble Microcircuits, a newly-formed holding company, which will co-ordinate the activities of Dylon and Dibble Electronics, a firm specialising in printed circuit board manufacture.



Rauk Xerox (UK) has signed a contract with the British Amateur Athletic Board (BAAB) for Steve Cram (right), BBC Television's Sports Personality of the Year for 1983, to carry out a series of charitable and social activities for the company.

During 1984 and the early part of 1985, Cram will make a number of personal appearances at a variety of functions, including several Rank Xerox sponsored 10 Series 10 kilometre road races and other major Rank Xerox athletics meetings.

In addition, he will visit schools for handicapped children and be involved in coaching at regional seminars for up and coming young athletes.

Rauk Xerox has devised the programme with the full co-operation of the BAAB to ensure Cram's schedule is not interrupted as he builds up to the Olympic Games in Los Angeles.

David Harris (left), marketing director of Rank Xerox (UK), says: "We are delighted to have been able to secure the services of Steve Cram to help us in our support for British athletics, begun last year with the introduction of the Rank Xerox 10 Series races."

"Cram's presence will be part of the overall athletics package involving Rank Xerox in a further series of events planned for 1984 and 1985."

■ Bytec Gulfstream has made three appointments to the team responsible for marketing the Hyperion 16-bit IBM-PC compatible portable business computer throughout Europe. Trevor Duplock becomes European marketing manager; David Greig, European technical manager, and John Woolmore, European financial controller. Duplock was most recently general manager of Abacus Electronics; Greig was previously technical director of an Amsterdam-based company that designed, produced and marketed peripherals and disc-based microsystems throughout Europe; and Woolmore has spent over 10 years in senior financial positions with companies in the computer and electronics industries, including Comma and Abacus.

■ The Peachtree support team has been expanded with the appointment of Peter Kroeger as support consultant with responsibility for product management of PBMS, the Peachtree Business Management System. He was previously a partner with R. Kerr & Co, chartered accountants and auditors.

## DIARY

**JANUARY 30**  
Scottish Micro Group film night, University of Strathclyde. Details: BCS, 01-637 0471.

**JANUARY 30-31**  
Implementing Strategies for Factory of the Future, Paris, sponsored by Technology Transfer Society, £300-345. Details: 01-242 4045.

**JANUARY 30-FEBRUARY 3**  
Structured System Design, a BIS Applied Systems residential workshop, Bedford Hotel, Brighton, £630 plus VAT. Details: 01-261 9237.

**JANUARY 30-FEBRUARY 10**  
JCL and Utilities for Programmers, Compower Training School course, Cannock, Staffs, £530. Details: Cannock 2511.

**JANUARY 31**  
Film and social evening with buffet, Exeter University. Details: BCS, 01-637 0471.

**FEBRUARY 1**  
Panel meeting of Institution of Electrical and Electronics Incorporated Engineers, on Hazards/Dangers of Software being used as Control Elements, London WC2.

**FEBRUARY 1-2**  
Database Systems for Microcomputers, course, Edinburgh, £339.25. Details: (031) 225 5673.

**FEBRUARY 2**  
Private Viewdata: Achieving Business Benefits Today, BIS Applied Systems conference, Lord's Banqueting Centre, London NW8, £140. Details: 01-261 9237.

**FEBRUARY 2-3**  
Implementation Strategies for Factory of the Future, conference sponsored by Technology Transfer Society, Royal Aeronautical Society Lecture Theatre, London, £300-345. Details: 01-242 4045.

**FEBRUARY 2-3**  
Cost-effective Software Design seminar, Oslo, £300-345. Details: 01-242 4045.

**FEBRUARY 5-7**  
VS APL Fundamentals, Cooking & Drury course, London W1, £300. Also February 21-23. Details: 01-493 6172.

**FEBRUARY 5-9**  
Education Arabia and the Middle East Business Equipment, Communications and Computer Show, Bahrain, run by Overseas Exhibition Services. Details: 01-

## Merlin

British Telecom Business Systems

# The Heavy-Traffic Controller

Conventional networking systems can be complex and frequently inefficient in their utilisation of both hardware and telephone lines. Sometimes errors creep into your system, and occasionally a communications link fails. But with the advent of British Telecom's Merlin Datelmux 5500, those problems become a thing of the past. The 5500 is the heavy-weight among statistical multiplexers. We can even optimise your network configuration for you.

### From 4 to 240 Channels

The 5500 can service up to 240 channels, either from point-to-point links or from up to 15 composite links to other Datelmux sites. Up to three 64k/bits links, in addition to a single kilostream link Datelmux for up to 56 channels. Not only this, you get integral error protection for your data and comprehensive network management.

### Central site control

However many terminals you have, the 5500 will route each one into its relevant computer port.

### Port contention

If you have more terminals than you have computer ports, the 5500's Port Contention option will form them into an orderly queue with a clear indication of the order of preference.

### Nodal capability

The alternate routing facility finds a way to get your data through. If the link between one Datelmux and another goes down, data will be re-routed automatically via a third one. You get maximum networking flexibility with economic onward linking and a consequent saving on line costs.

### Local data switching

You can use Datelmux 5500 as a local area network, switching terminals and computer ports within a building, and still have gateways to the outside world.



THE MERLIN  
DATELMUX  
5500  
SERIES  
ALSO INCLUDES:

Datelmux 5101/24/8 channel asynchronous.  
Datelmux 5111/24/8 channel asynchronous interworking with Datelmux 5300/5500 networking products.  
Datelmux 5121 4 channel synchronous time division multiplexer.  
Datelmux 5300 32 channel point-to-point multiplexer with optional onward linking at node sites.

To: Victor Brand, Merlin, FREEPOST, London SW19 8BR

Please send me a representative ☐ DATE/CA

Please send me further information on the Datelmux 5500 Series ☐

NAME  (PRINT NAME)

POSITION

COMPANY/ORGANISATION

ADDRESS

POSTCODE  TEL NO

Merlin  
British Telecom Business Systems

# Microdata 1000

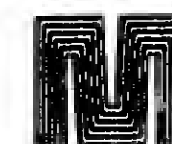
## Brings Reality to the desk top workstation

The new M1000 workstation from Microdata has a unique feature which makes it stand above the competition: the Reality operating system.

World market leader in implementing Pick-based operating systems on the established Reality and Sequoia (Series 9000) mini-computer ranges, Microdata now puts the same ease of use onto the desk top. Total compatibility from range to range enables applications to be developed and run on an M1000 workstation, on linked M1000 workstations, on a Reality system or on the largest of multi-site Sequoia networks.

Find out today the many positive benefits which a Microdata M1000 puts at the end-user's fingertips. Call Hemel Hempstead (0442) 61266 now and ask for the One Thousand Hot Line.

And then don't settle for less.



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Tel: (0442) 61266. Telex: 825868.  
Microdata is a McDonnell Douglas company.





# Users want better support

Gripes and good points are highlighted by the 1983 user satisfaction survey. John Riley looks at the results

LAST year's laggard about responding to the national Computer Weekly/Datapro user satisfaction survey have pulled their socks up this year and mainframe and minicomputer users remain generally satisfied with their machines. Despite that, the general level of technical support supplied by manufacturers is still weak.

Those are among the broad findings of the 1983 survey, the largest ever, which is based on 2,064 user responses representing a total of 3,390 systems. There were 819 mainframe and 1,245 minicomputer user responses—more than double last year's response (Figure 1).

In the mainframe section this year, the IBM plug compatible manufacturers, Amdahl and National Advanced Systems (NAS), get the best ratings by their users for all-round performance. However, the sample for these companies is low, so perhaps more impressive is IBM's high rating based on a sample of nearly 400.

Sperry and NCR, which came bottom last year in the mainframe user ratings, get a sharply increased vote of confidence from their users this year, judging by the numbers of users prepared to recommend their systems and the satisfaction index (Figure 4).

There is a sharp drop in the number of Digital Equipment users who would recommend their systems, but that may be the result of the low sample, and of DEC's decision last May to drop DEC-System 10 and 20 development.

Top runners in the minicomputer section are Hewlett-Packard, DEC and Perkin-Elmer, in that order, with a 3.2 satisfaction rating and best recommendations from their users. The 216 IBM minicomputer users who responded put the company fourth.

NCR gets the wooden spoon in the minicomputer section, with a four-point drop in user satisfaction to 2.5 from 2.9 last year. Data General and Datapoint are all down on last year's ratings and

COMPUTER WEEKLY sent 10,000 questionnaires to a random sample of subscribers last September to gather information for the 1983 Computer Weekly/Datapro user satisfaction survey—the largest so far.

The aim of our survey, now in its fourth year, was to gather pertinent information about each system and its operation, such as type of industry, principal applications, sources of applications programs, primary programming language used and future acquisition plans.

The real core of the survey, however, is the action where users are asked to indicate the advantages and disadvantages of their systems; to rate various aspects of their systems; their software and support; to evaluate how much, if at all, the systems lived up to expectations; and to make recommendations to other users.

Responses may have been coloured by individual variations in expectations, different applications, the operations environment, and the quality of service and support provided by the vendor's branch office.

Moreover, a range of systems is represented, both old and new, and performance of older machines can pull down overall satisfaction ratings with a manufacturer.

A total of 2,270 of the 10,000 questionnaires were returned, initially screened and forwarded to Datapro for further processing. A total of 2,064 were accepted. These represented a total of 3,390

systems, because many of the respondents have multiple systems. In cases of multiple systems, each model was rated on a separate copy of the questionnaire.

The results are given either in straight percentages of users' responses to certain questions, or by reference to a satisfaction index.

The satisfaction index was calculated by asking users to grade aspects of their systems into one of four categories, which were then weighted. "Excellent" was weighted as four; "good" as three; "fair" as two; and "poor" as one. From this, an average mark (between 1.0 and 4.0) was obtained.

The questions are the same as those asked in previous years. This provides a sound base for comparison with opinions in earlier surveys.

The overall response was more than double that of last year's survey, which had 954 user responses, representing 1,273 systems. The most comprehensive covered manufacturers were IBM and ICL in both the mainframe and minicomputer sections, and Digital Equipment in the minicomputer section.

Responses from users of other manufacturers' equipment were thinner on the ground, and figures are only presented here when there is a sample of over 10 mainframe user responses and over about 20 minicomputer user responses.

The full survey report, to be published by Datapro at the end of January, provides a considerably more detailed breakdown of the results.

Early high ratings are Amdahl's 470/V6 (with a 3.8 rating), IBM's 4331 (3.7) and 4341 (3.6), and Honeywell's Level 64 and 66 machines (3.6). Amdahl, NAS and CTL score highest in overall rating, but the sample is small. ICL and NCR have ratings of 2.9. The reliability of ICL's 2970 and 2976 mainframes is generally high, that of mainframe manufacturers' peripherals is lower, averaging 2.8 overall.

However, although reliability of mainframes is generally high, that of mainframe manufacturers' peripherals is lower, averaging 2.8 overall. IBM's 3031 peripherals rate highest with 3.4, and peripherals for its other machines are slightly better than average. In this category ICL is slightly lower than average.

Last year's general finding about the quality of technical support—that it falls below the quality of other aspects—is repeated this year. Mainframe manufacturers which are consistently a couple of points below average on documentation, user education and troubleshooting are Burroughs, ICL and Sperry.

Burroughs, however, has improved its technical support since last year to judge from its ratings: last year it was given on all-round average of 1.8 for technical support, but this year it receives an average rating of 2.1.

Overall, mainframe manufacturers are reported to be quicker off the mark with their hardware deliveries. The proportion of users finding that delivery or installation of their equipment was ahead of schedule rises from 14.6% to

26.9%. At the same time, one complaint of late delivery is down overall, from 11.5% to 8.6%.

Users credit CTL, the plug compatibles, Amdahl and NAS, and NCR with the largest number of early deliveries. ICL was short of schedule with deliveries to 18.1% of its users, compared with 11.7% for IBM. However, 9.2% of ICL's mainframe users reported late deliveries, compared with 5.1% of IBM users.

While hardware deliveries were often ahead of schedule, software deliveries were not. Only 9% of mainframe users reported early software, while 14.8% experienced delays. Just over one quarter (25.6%) of ICL users said the software deliveries had been late.

IBM's mainframe users' main problem was to keep up with enhancements and changes to the hardware and software—19.5% of respondents had this difficulty, especially 3032 and 3083 users. That problem was also reported by a slightly higher proportion of respondents of Honeywell, Sperry and ICL users. Few NCR users encountered the problem—only 4.8% found it difficult to keep up.

Turning to the minicomputer and small business system ratings, the good overall satisfaction level of 3.0 reported last year is maintained.

The 76 users of other, miscellaneous minicomputer companies show a lower overall rate of satisfaction with their machines than last year.

Name of manufacturer	User responses (minimum of 10)
<b>MAINFRAMES</b>	
Amdahl	17 (7)
Burroughs	35 (9)
CTL	14 (5)
Digital Equipment	12 (5)
Honeywell	50 (27)
IBM	396 (130)
ICL	196 (83)
NCR	20 (14)
NAS	10 (—)
Sperry	61 (21)
Others	8 (25)
<b>Total</b>	<b>819 (321)</b>

Name of manufacturer	User responses (minimum of 10)
<b>MINICOMPUTERS AND SMALL BUSINESS SYSTEMS</b>	
Burroughs	59 (37)
Data General	39 (32)
Datapoint	18 (12)
DEC	271 (101)
GEC	29 (4)
Hewlett-Packard	90 (33)
Honeywell	56 (28)
IBM	216 (104)
ICL	189 (98)
Microdata	32 (—)
NCR	25 (14)
Perkin-Elmer	17 (4)
Prime	56 (18)
Systech	43 (18)
Texas Instruments	15 (11)
Wang	14 (7)
Others	76 (90)
<b>Total</b>	<b>1245 (633)</b>

Fig. 1. Number of participants in the survey.

Manufacturer & model (user response/number of systems represented in brackets)	Overall satisfaction (Scale 1.0-4.0)	Percentage of users happy with response time	Percentage of users finding system easy to expand/reconfigure	Percentage of users finding enhancements/changes to hardware/software hard to keep up with	Percentage of users not getting all the software or support promised by vendor
<b>ADVANTAGES</b>					
(Average: 2.9)	(Average: 52.9)	(Average: 49.9)	(Average: 19.3)	(Average: 13.4)	
Amdahl all models (17/27)	3.3	68.2	63.6	0.0	9.1
Burroughs B3900 (12/15)	2.8	41.7	75.0	0.0	25.0
CTL 8000 (14/30)	3.1	77.8	66.7	22.2	11.1
Honeywell DPS 7 (12/19)	2.7	75.0	66.7	25.0	8.3
Honeywell DPS 8 (10/15)	3.0	58.3	66.7	16.7	16.7
Honeywell Level 64 & 66 (15/18)	2.9	58.8	47.1	23.5	11.8
IBM System 370 (28/39)	2.9	44.1	38.2	14.7	5.9
IBM 3031 (12/24)	2.9	50.0	56.3	6.3	8.0
IBM 3032 (18/35)	2.8	40.0	32.0	28.0	0.0
IBM 3033 (41/62)	3.0	59.2	49.0	24.5	4.1
IBM 3081 (46/76)	3.0	59.2	64.8	7.4	7.4
IBM 3083 (36/50)	3.1	71.8	59.0	25.6	5.1
IBM 4331 (51/52)	2.9	52.9	45.1	21.6	11.8
IBM 4341 (164/231)	3.0	50.0	45.2	21.5	8.1
ICL 1900 Series (11/12)	2.7	36.4	45.5	9.1	0.0
ICL 2946 & 2955 (26/29)	2.8	63.0	40.7	18.5	33.3
ICL 2950 & 2956 (22/33)	2.6	50.0	46.2	11.5	11.5
ICL 2960 (28/56)	2.8	39.4	24.2	27.3	36.4
ICL 2966 (67/154)	2.8	49.4	55.4	18.1	21.7
NAS all models (10/17)	3.3	76.9	53.9	0.0	7.7
NCR 8500 (11/15)	2.6	58.3	58.3	0.0	33.3
Sperry 90 Series (21/44)	2.6	26.1	21.7	13.0	17.4
Sperry 1100 Series (29/37)	2.7	38.7	51.6	32.3	19.4

Fig. 2. User satisfaction with certain mainframe models.

Manufacturer & model (user response/number of systems represented in brackets)	Overall satisfaction (Scale 1.0-4.0)	Percentage of users happy with response time	Percentage of users finding system easy to expand/reconfigure	Percentage of users not getting all the software or support promised by vendor	Percentage of users finding computer proposed by vendor was too small
<b>ADVANTAGES</b>					
(Average: 3.0)	(Average: 50.3)	(Average: 64.3)	(Average: 17.4)	(Average: 14.8)	
Burroughs B1900 (28/38)	2.9	56.7	66.7	16.7	16.7
DEC PDP-11/34 (50/78)	3.1	58.6	63.8	10.3	12.1
DEC PDP-11/44 (43/72)	3.2	63.0	65.1	13.0	4.4
DEC PDP-11/70 (34/67)	3.0	65.0	76.0	12.5	15.0
DEC VAX-11/750 (37/56)	3.3	64.3	73.8	9.5	7.1
GEC 40XX Series (19/50)	3.3	58.3	83.3	11.7	5.0
Hewlett-Packard 3000 (55/81)	3.0	64.0	60.0	44.0	12.0
Honeywell DPS-4 (20/21)	3.2	54.8	80.7	17.7	11.3
Honeywell DPS-4 (128/155)	2.6	50.0	70.0	5.0	15.0
IBM System 38 (66/73)	3.2	43.5	65.9	8.0	15.2
IBM System 25 (19/33)	3.1	30.3	80.3	22.7	25.8
ICL ME29 (93/112)	2.9	54.6	86.4	18.2	9.1
ICL 2904 (28/34)	2.8	48.5	65.0	21.7	19.6
Microdata Reality (21/33)	3.2	45.8	34.4	15.6	12.5
NCR 9000 Series (17/20)	2.5	44.4	66.7	37.5	33.3
Perkin-Elmer all models (17/36)	3.2	61.1	75.0	44.4	22.2
Prime 750 & 850 (24/47)	2.9	42.9	78.0	5.0	10.0
Prime other 50 Series (32/43)	3.1	56.8	59.8	14.3	8.1
Systech 6000 (17/25)	3.0	80.0	70.0	25.0	10.0

Fig. 3. User satisfaction with certain minicomputer and small business models.

Manufacturer	Percentage of users who would recommend their system to others	Percentage of users who would not recommend their system to others	Overall satisfaction index (Scale 1.0-4.0)
1983	(1982)	1983	(1982)
Av:	(Av:)	Av:	(Av:)
75.2	(73.7)	9.7	(12.4)
90.9	(100.0)	0.0	(0.0)
69.0	(77.8)	14.3	(11.1)
93.8	(90.0)	0.0	(0.0)
50.0	(80.0)	28.6	(20.0)
75.9	(73.1)	9.3	(7.7)
83.4	(86.2)	10.2	(6.9)
63.1	(65.0)	23.3	(16.3)
92.3	(—)	7.7	(—)
61.9	(50.0)	23.8	(21.4)
58.3	(38.1)	30.0	(38.1)
71.4	(69.6)	14.3	(8.7)

Fig. 4. User ratings—mainframe manufacturers.

Perkin-Elmer tops the poll in terms of overall satisfaction (3.2) and 90% of users recommending its machines, but the sample of 17 is low. More impressive are the ratings from larger samples achieved by Hewlett-Packard and DEC, which are recommended by 90% of their users.

As in the mainframe results, the two companies which received the lowest overall ratings last year gain a much bigger vote of confidence this year. Both Honeywell and Burroughs have more users who would recommend their systems and fewer who would not.

Although NCR gains ground in the mainframe section, the overall satisfaction points among its

**While hardware deliveries were often ahead of schedule, software deliveries were not**

minicomputer users slip this year from 2.9 to 2.5, as does the percentage of respondents who would recommend their machines. The main problem identified by users is lack of promised software (35.7%) or support, and late installation of equipment (28.6%).

However, NCR's users remain loyal, with only one expecting to move to another vendor.

Data General, Datapoint and Wang all lose ground on user satisfaction this year. The Data General figures are affected by fewer users recommending its older CS Series and Eclipse machines, and Datapoint gets a low satisfaction rating for its 6000 Series gains.

The Wang VS Series machines show overall ratings of 3.1 from the 10 user replies. The lower figures for user satisfaction reflect the low number of Wang user replies both this year and last.

IBM rides high in the minicomputer charts, and even its aged System 34 gets a satisfaction rating of 3.1 from 128 users. Prime also comes out well with overall increases in its ratings by users.

User loyalty in the minicomputer sector is strong. The overall proportion intending to switch to another manufacturer's machines

over the next year is about 5%. The most loyal are IBM and Hewlett-Packard users—only 0.9% and 1.0% respectively intend to change.

As with the mainframe survey, the quality of documentation offered by minicomputer manufacturers is generally low, with an overall average of 2.5 on the satisfaction index. However, Burroughs, Datapoint and Systech are awarded ratings of 2.0 by their users for documentation. Highlighted as particularly poor are the Burroughs B800 and the NCR 9000 machines with ratings of 1.6 and 1.8 respectively.

IBM gains the highest overall score for documentation at 2.9. IBM's minicomputers are also considered most reliable by users with a rating of 3.7. Hewlett-Packard, GEC, Prime and Wang also get good ratings for CPU reliability. IBM, Hewlett-Packard and DEC gain best ratings for peripherals.

Perkin-Elmer and Honeywell minicomputers have the highest ratings for responsiveness, with 85% and 77.2% of users, respectively, happy with their machines' response time.

IBM does well in the survey for promptness of deliveries both of hardware and of software, although only 24.4% of respondents find that terminals and peripherals carried over from other systems are compatible as promised.

ICL's System 25 minicomputer comes out tops from the point of view of the number of users (83.3%) finding the machine easy to reconfigure or expand—just ahead of DEC's Vax 11/780.

However, ICL users encountered late delivery of software (22.8%) and hardware (19.0%).

A comparison of the mainframe and minicomputer user responses reveals broad satisfaction with most aspects of their machine. However, technical support, manufacturers' applications programs and the ease with which systems can be converted need more attention during 1984.

Copies of the Computer Weekly/Datapro survey, British User Ratings of Computer Systems, price £2 Swiss francs each, may be ordered from Datapro Services S.A., CH-1164, Buchillon, Switzerland.

Part two of this survey will appear in next week's issue.

Manufacturer	Percentage of users who would recommend their system to others	Percentage of users who would not recommend their system to others	Overall satisfaction index (Scale 1.0-4.0)
1983	(1982)	1983	(1982)
Av:	(Av:)	Av:	(Av:)
78.4	(80.8)	10.7	(9.2)
64.5	(58.3)	22.6	(19.4)
59.1	(78.1)	25.0	(0.0)
73.7	(91.7)	21.1	(4.0)
87.5	(90.1)	15.4	(0.0)
71.8	(100.0)	2.9	(9.1)
89.2	(57.1)	17.0	(25.0)
61.0	(60.9)	6.6	(4.8)
66.9	(88.5)	6.6	(3.1)
72.7	(77.3)	14.4	(13.4)
66.7	(—)	8.3	(—)
55.6	(78.6)	22.2	(7.1)
90.0	(100.0)	0.0	(0.0)
83.1	(82.4)	3.1	(11.8)
76.4	(83.3)	12.7	(5.6)
76.2	(90.9)	9.5	(9.1)
76.5	(100.0)	5.9	(0.0)
47.4	(68.9)	21.1	(12.2)



Users are generally satisfied with their machines.

## Meet the family

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First Teilings of software and systems house Data Logic has prepared a series of reports on networks called *Teisheds*. The eighth of these is an communication protocol. Due to lack of space we are obliged to print it in five instalments.

THIS Jensheet describes the general principles of operation of data communications line protocols normally used on conventional in-house links and external modem links. Special protocols used on Local Area Networks (LANs) are not covered.

A communications line protocol is a procedure used to control the exchange of data between two or more communicating devices over a point to point or multi-point (multi-drop) communications link. In general terms the communicating devices can be two computers communicating over an in-house/external point to point link; a computer communicating over an in-house/external point to point link; a computer communicating with a number of terminals over an in-house point to point/multi-drop link or external point to point/multi-point link; or two terminals communicating over an in-house/external point to point link.

Communications line protocols can be divided into full-duplex protocols and half-duplex protocols. Usually a full-duplex protocol can also operate as a half-duplex protocol, but the reverse is not true.

Full-duplex protocols support the simultaneous transfer of data in both directions (from device A to device B and from device B to device A) and require a full-duplex point to point communications link.

Half-duplex protocols only support the transfer of data in one direction at a time and can be further sub-divided into Contention type protocols and Poll/Select type protocols. Contention and Poll/Select protocols both operate over half-duplex/full-duplex point to point links and Poll/Select protocols can also operate over half-duplex multi-point (in-house multi-drop) links.

The following are examples of line protocols:

**Full-Duplex Protocols.** The bit oriented ISO High-Level Data Link Control (HDLC) protocol which is equivalent to the ANSI Advanced Data Communications Control Procedure (ADCCP) protocol. The bit oriented IBM Synchronous Data Link Control (SDLC) protocol. The control character oriented DEC Digital Data Communications Message Protocol (DDCMP).

**Half-Duplex Contention Protocols.** The most well known are the control character oriented IBM 2780 and the IBM 3780 Remote Job Entry (RJE) protocols.

**Half-Duplex Poll/Select Protocols.** Most Poll/Select protocols are used for communicating with clustered display systems and the following control character oriented protocols are the best known: Honeywell T1000 protocol, Honeywell VIP protocol, IBM 3270 protocol, ICL 7181 (CO1) and ICL 7502 (CO3) protocols, Univac U-200 protocol.

The early 1960s saw the introduction of a number of equivalent standards for a seven-bit character set for data transmission: USA-SCII (USA Standard Code for In-

# Protocols you will need before and after LANs

formation Interchange) normally abbreviated to ASCII; CCITT Alphabet No 5; ECMA (European Computer Manufacturers Association) seven-bit coded character set.

These standards defined the following set of 10 seven-bit transmission control characters: SOH (Start of Heading); STX (Start of Text); ETB (End of Text); EOT (End of Transmission); ENQ (Enquiry); ACK (Acknowledgement); DLE (Data Link Escape); SYN (Synchronous Idle).

A control character based on two character combination was also defined: DLE EOT Disconnect Switched Line Connection.

The late 1960s through to the early 1970s saw the introduction of a number of equivalent protocols (procedures) based on the ASCII seven-bit code. ECMA was the main influence at that time and UK computer manufacturers (ICL included) followed the ECMA protocol standards which were called Basic Mode Procedures for Data Communications using the ECMA seven-bit Code.

US computer manufacturers (Burroughs, Univac etc) were influenced by the US Standard Communications Control Procedures as defined by ANSI.

Janey Check (LRC). The BCC character is formed by performing a binary add without carrying on each of the seven bits of the transmitted characters following SOH (or STX if there is no SOH) including ETB or ETX but excluding any SYN characters.

In addition to BCC error checking, each transmitted seven-bit ASCII character has a parity (bit 8); this is known as the Vertical Redundancy Check (VRC) bit. VRC error checking is the only means of detecting errors in the control character sequences (ACK, NAK, ENQ etc) used in protocols, because only data blocks use BCC error checking.

IBM introduced its Binary Synchronous Communications (BSC) Procedures which included the seven-bit ASCII code but not the associated procedures.

IBM uses three character sets in its BSC procedures: Transcode, a six-bit character set which is now obsolete; ASCII seven-bit code; and IBM eight-bit EBCDIC (Extended Binary Coded Decimal Interchange Code).

BSC uses nine of the ten ASCII transmission control characters previously defined (the ACK is not used).

In addition BSC uses a number of two-character combinations to define further transmission control functions.

The following is a list of these functions with their equivalent ASCII characters in square brackets:

ACK0 [DLE 0] Acknowledgement (general purpose ACK plus ACK for even numbered data block).

ACK1 [DLE 1] Acknowledgement for odd numbered data blocks.

RVI [DLE <] Reverse Interrupt.

TTD [STX ENQ] Temporary Text Delay.

WACK [DLE ;] Wait-before-transmit positive acknowledgement.

BSC uses an extra transmission control function based on a single character; ITB [US] End of Intermediate Transmission Block.

BSC specifies a transparent-text mode which provides for the transmission of binary data. This mode can only be used with the IBM eight-bit EBCDIC code. Any control characters transmitted in transparent mode must be preceded by a DLE (Data-link Escape) character if they are to be recognised as control characters.

The following two character combinations are recognised during transparent-text mode operation: DLE STX, DLE ETB, DLE ETX, DLE ITB, DLE ENQ, DLE SYN.

At the receiving end, each DLE of a two-character combination is stripped and for each eight-bit data pattern which resembles a DLE, an extra DLE is inserted by the transmitting end.

BSC has another mode of operation known as Limited Conversational Mode which allows a data block to be transmitted in response to a correctly received data block but only if the received block is terminated by ETX or DLEETX.

When conversational mode is not being used, the normal response to a correctly received data block is either ACK0 (even numbered data block) or ACK1 (odd numbered data block).

## FORTTRAN



Brian Meek is the director of the Queen Elizabeth College computer unit.

# Why standards need improving

Two weeks ago Brian Meek wrote about the project to raise a new Fortran standard. This week he explains his ambitions for the new standard

LANGUAGE standards, as a group, must be the largest and most complex standards yet produced. Most standards specify requirements for a product, though this may be abstract, like a safety procedure.

A supplier of a standard-conforming product has to ensure the requirements are met; the user has the assurance that the features covered by the standards will be present in the product.

The trouble with language standards is that they cover two kinds of product: programs, and systems which process the programs. This means that requirements for two kinds of product, and hence two kinds of supplier and two kinds of user, are mixed.

Many, though not all of the ills of language standards — their ineffectiveness, the widespread confusion about them — can be traced back to this overlapping of purpose.

Arthur Sale, one of the principal architects of the Pascal validation effort, has pointed out that it is difficult, indeed foolish, to try to put all the requirements that one might want of languages and language processors (the hardware/software systems that run programs) into a single document. In practice, the standards pro-

vided so far have resolved this problem by concentrating almost wholly on the language itself — the programs.

Requirements on processors are usually little more than that they should correctly process correct programs. Standards committees have spent their time deciding on language constructs, while the implementors have been able to sit back, keep watch, and ensure unobtrusively that when an issue arises to do with language features into something which might place obligations upon them rather than upon programmers, the matter is left "system dependent" or omitted altogether.

My personal ambition (not shared by everyone on the project, I admit) is that the idea of a direct standard will become acceptable and that this will happen.

Yet another advantage of this indirect, gradualist approach is that there would be no need to scrap the indirect standard — it could remain as a safety net for those too timorous to go the whole hog.

Least the idea of direct standards in this area should still terrify the Fortran community, it is worth pointing out that direct requirements covering some relevant items already exist in other language standards. For example, the Minimal Basic standard includes some requirements on exception handling and documentation.

As a user of both languages for a good many years, I fail to see what there is about Basic that is so special that it can have direct requirements on processors included in a standard, whereas Fortran cannot.

Which brings me to the final point, the remaining major ambition: if we can produce a standard, direct or indirect, for Fortran processors — and we know we can — there is no reason why others cannot be produced for other languages: Pascal, Cobol, PL/I, or whatever. It was a conscious decision on the part of the responsible BSI committee that this Fortran project is just a pilot scheme, to demonstrate that such things are possible.

Fortran was chosen partly because it has a stable standard likely to hold for some years, because it has a demonstrable crying need for such a standard, and because a good deal of the groundwork had already been done, by people to the BCS Fortran Specialist Group, led by Alan Clarke and David Muaworthy.

Thus once this standard is published, others on the same lines can be expected — ideally produced alongside, or only slightly behind, the primary language standards. Those who look closely at the working draft, or the future published draft for comment, will find that underneath the Fortran-related surface is a framework largely independent of the particular language. This is no accident — it was designed that way.

I'd go further. I believe, though it has not yet been generally discussed, that what we are doing can be extended way beyond the languages area, to software generally, or any systems as they affect the user. This may seem an overweening ambition, but I do not believe it weaves excessively.

I would go so far as to condemn as irresponsible anyone who thinks that the Elysium of post-Cobol, post-Fortran computing will not need standards.

So please don't think this exercise is confined to a few frenzied Fortran freaks. It could affect you. And you. Yes, even you in the Alvey workshop.

Those who would like to follow up some of the points raised in this article can look at my NCC Guide No. 13 in computing standards, the one on programming languages and forthcoming issues of the Journal Computers and Standards published by North-Holland.

# Screen star. Supporting cast.



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I would go so far as to condemn as irresponsible anyone who thinks that the Elysium of post-Cobol, post-Fortran computing will not need standards

Giveo that standardising just the language constructs is a large enough task, it seems sensible to accept that this is enough for one standard — provided you do not delude yourself or others that you have finished the job. Unfortunately, to date this seems to be the illusion that has been consciously or unconsciously fostered.

The myth has even been created that it is unreasonable or even impossible to standardise features commonly omitted from or left "system dependent" within languages standards.

The first ambitious aim of the UK project is to shatter that myth. If there are difficulties in standardising requirements upon processors, most are political and not technical. The need is too great for the myth to remain unchallenged any longer — one has only to look at the portability problems, for programs and people, which still remain with our so-called "standard" languages, without even beginning on quality requirements.

The new "method of specifying requirements" standard is a modest step towards tackling these areas, but hand in hand with the modest aim is the more ambitious one of showing that standardisation of requirements upon processors is achievable.

Language buffs might like to regard the proposed standard as a "meta-standard" — it would be perfectly possible to use it to draw up a specification of requirements for Fortran processors and then standardise that. I hope that government agencies or large corporations might do precisely that, for

924 is 1.174



# PRINTERS AND TERMINALS

## The Japanese threaten to take over the printer markets

John Kavanagh sets the scene for our six-page special feature with an Oriental warning of things still to come

WITHIN the leading UK computer company, a small, selling Japanese terminals and the world's number two computer firm, two of its five UK terminal distributors there is clearly something peculiar about the market.

But in the last 13 months ICL has gone to exhibitions to sell Japanese products to systems houses and other third parties, while two distributors have dropped Digital Equipment terminals.

These examples are typical of a market which has been hit by the almost simultaneous arrival of the microcomputer and the Japanese. Printer manufacturers in particular are nervous about what the Japanese will do next. And meanwhile the terminal and printer distribution business has staggered from one crisis of confidence to the next over the last year.

But the industry now believes the market will largely sort itself out this year. The extent of the Japanese threat will become clearer as Japanese firms try to move up from slow-speed printers to compete head-on with European and US manufacturers in the medium and high-speed markets. And cowboys on the distribution side will be wiped out as users become more educated and demanding of their suppliers.

The arrival of the microcomputer brought demand for printers which were equally low in price. "If you look at Western markets you see cost has become all-important," says David Allison, printer marketing manager at UK manufacturer Newbury Data Recording.

"The Japanese have perfected the art of producing low-cost, high-volume goods. US and European companies simply can't hope to compete with low-cost 80-column Japanese printers."

Allison's views are reflected in the fact that in the first half of last

"The Japanese have perfected the art of producing low-cost, high-volume goods. US and European companies simply can't hope to compete with low-cost 80-column Japanese printers."

year UK imports of Japanese printers almost trebled in volume and value. The figures also show that low-cost units were involved: for by volume, the Japanese products represented 55% of all printer imports - yet by value they accounted for only 25%.

However, Allison says that as users get their first taste of microcomputing they soon want more powerful machines - and that has brought demand for faster, heavy-duty printers. The industry is now nervously awaiting the Japanese response to this demand.

"The Japanese firms are squeezing speeds of 180 characters a second out of their original low-cost mechanisms," Allison says. "But that's as far as they go. We're getting a lot of business at the bottom of our range from micro users, because although we're more expensive than the Japanese here our

products are more robust, being built for higher speeds.

"But after their success at the bottom of the market the Japanese will move up to meet its head-on. In the past Western manufacturers have given in to the Japanese in the slow-speed market and concentrated on the faster, more robust end of the business. But if the Japanese are moving up to compete with them they can't now abandon that part of the market and move up still further. They must now stand and fight."

Allison believes Western firms can hold their own in that fight. "For the faster products we all have to use more expensive motors and materials, which we all buy on the same worldwide markets," he says.

"This means the Japanese have the same costs as the rest of us. Where they might score is in the Japanese government's attitude towards support: companies don't have to pay back as quickly as here, where shareholders want a quick return. But even so the big Japanese printers we've seen so far are more expensive than ours, because of the shipping costs."

"This shows we can build on our local advantages: we manufacture here, we support and train customers using local people and we speak the language. Users like a single source for printers of all speeds, training and support and so on."

Such fighting talk hides the fact that many manufacturers have taken an "if you can't beat 'em join 'em" attitude. Indeed, Newbury Data has added low-cost low-speed Japanese products to its range. ICL is buying printers and terminals from Japan to build them into its own systems and to sell as OEM products.

Other big names in these markets are having their products made in Japan and other Far East countries. Even one distributor, European firm Geycke Electronics, has become a "manufacturer" by designing its own terminals and getting them built in the Far East.

Geycke points out that labour is cheap in countries like Korea and Taiwan, so many companies have been set up purely as high-technology manufacturing concerns. They do not try to compete against the marketing know-how of big Western corporations, so they do not have sales, distribution and field service overheads.

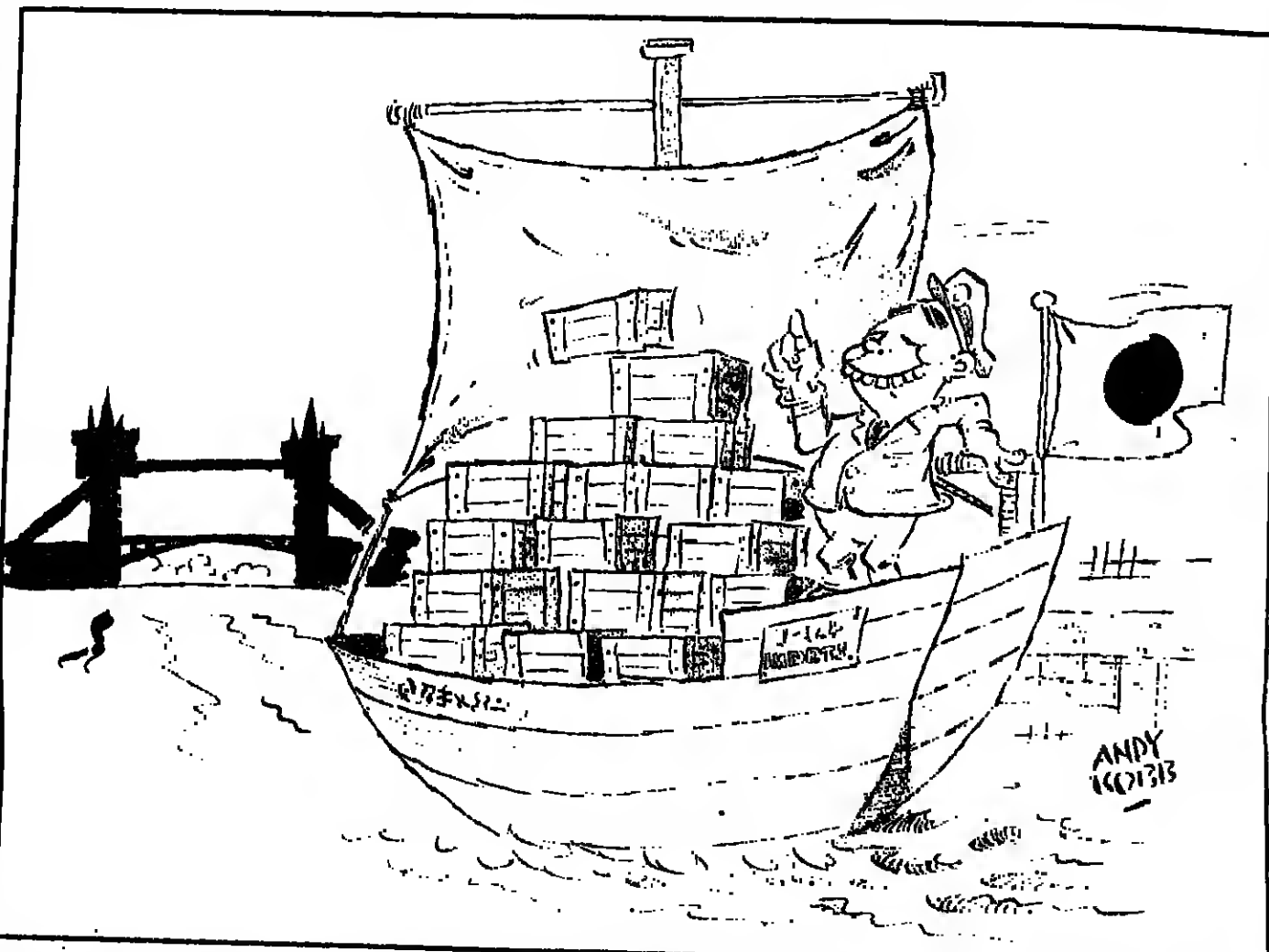
Geycke says many of its big-name suppliers were getting their products built in the Far East, thus adding another link to the distribution chain, so it decided to cut out one link by dealing directly with the manufacturer.

It argues that this means it can have the products designed specifically for the European market.

But Geycke's move also raises another issue which has hit the terminal and printer business. The company says making its own products gives it more control over the outputs for those products.

This control is needed to stamp out fly-by-night dealers which switch from one product to another depending on where the best deals are to be made. They might even go abroad to find a local distributor or manufacturer's subsidiary which is overstocked and glad to sell at cut rates.

These firms have no expertise in particular products and no commitment to any manufacturers.



The losers are the users, getting no help if a product needs attention, and the manufacturers, which can get a bad name because of the poor service from the dealer.

Geycke marketing executive Pat Boyce says the market has got worse in the last year - but 1984 will be a bad year for the cowboys. "Everyone's getting in on the act, but it will sort itself out by the end of the year," she says. "This is partly because there are so many companies competing and partly because users are better informed and will shun the cowboys."

Allison at Newbury Data Recording comes back to the Japanese again on this issue. "Many Japanese manufacturers have given their products to any dealer who asked," he says. "This has led to a lot of fighting between dealers over prices and many are not making proper margins."

"As a result they are no longer prepared to take certain products. So if a manufacturer wants dealers it must guarantee margins. This all comes down to proper control of the dealer network. Japanese companies have realised this and are now sorting their networks out."

Even big and apparently reputable computer firms have had distribution problems - though of a different kind - which raise a further issue over the basic design of terminals.

In the last year two of Digital Equipment's five UK terminal distributors have dropped the company's products. The latest, Zygal Dynamics, says DEC wanted the distributors to sell outside its own computer user market but that the products were difficult to sell to users of other manufacturers' computers. This was because they were too expensive,

especially when compared with Japanese terminals.

Even one of DEC's successful distributors, Rapid Recall, agrees - but also points to DEC's latest products, which bear out the thinking among other suppliers.

"DEC terminals have not been

wholly suited to the general market because they have options specifically aimed at DEC computer users," says Jim White, terminals division manager at Rapid Recall.

"But the new VT200 family will knock competitors like Televideo

and C Itoh right out."

White's point about offering basic, general terminals is echoed elsewhere. "There are dangers in making a basic product more complex," says Mike Ayres, marketing manager at CPU Peripherals, which distributes Esprit Systems terminals.

"A manufacturer is so safe ground with familiar and well-established production technology. What comes out of the factory is something that has the reliability you get with volume production. And the price is bound to be favourable."

Ayres' final comment draws attention to the fact that it is not the terminal that matters so much as the way the entire application system is designed. "We should be devoting more thought to intelligence rather than to intelligence. What matters to the end user is not where the processing is done but how to sort out significant information from the mass of data available."

These views are borne out by a recent survey of US suppliers, which shows that standard alphanumeric terminals account for over 60% of all terminal revenues. The market is growing 15% a year.

The printers and terminals feature is published to coincide with the Peripherals '84 exhibition to be held next week at the Cunard International Hotel, London. Backed by the Peripherals Suppliers Association, Peripherals '84 takes place from Tuesday, January 31 to Thursday, February 2. Opening times are from 10.00 to 5.30 on Tuesday and Wednesday, and from 10.00 to 4.00 on Thursday.



ALLISON: "We're getting a lot of business at the micro end."

## PRINTERS AND TERMINALS

'Graphics quality' is a term much bandied about, but how many peripherals have really got it? asks David Casey

## Making numbers come to life

DESCRIBING video display units and printers as "graphics quality" devices is a marketing ploy used by manufacturers in a keenly competitive marketplace. Frequently, that claim cannot be justified - as the multi-sided circles and inconsistent shadings bear witness.

The fact that such claims are being made for peripherals indicates the level of interest in the commercial world for systems that can turn files of unexciting numerical data into piecharts, tables and graphs.

Powerful, 32-bit computers merging graphics, data and text have their own niche in the market. Systems like the ICL Perq and the Apple Lisa are stand-alone machines with a high resolution screen supplied as standard.

Pre-dating the standalones as an integrated graphics system is the Rank Xerox 8010 Star terminal, a workstation for the vendor's office

As the data on a display increases the operator's ability to absorb information decreases

automation system. It is also the system which pioneered the use of the mouse as a graphics controller.

But there is also a definable market - and by every account an extremely lucrative one - for peripherals that can support more conventional computers with graphics capabilities. The concept of a high resolution screen that takes multiple "windows" to view concurrent activities has now been borrowed by DEC from the ICL Perq and the Apple Lisa.

Integration of text with data processing and graphics features underlies the Vax station range, which DEC announced in mid-1983. Aiming to achieve the graphics performance required by advanced technical users, the Vaxstation 100 is a black-and-white display monitor system. It is understood that a colour version is being planned.

At its name implies, the Vaxstation was designed for a particular family of hardware. The system was conceived as a terminal to the 32-bit Vax range of processors, and it is unfortunate that there can be no market for the station among the 300,000-strong PDP-11 user base worldwide.

Graphics applications envisaged for the system are rather more advanced than business statistics. The typical operator will edit an engineering drawing, add word processed notes, and call information from a database elsewhere on the computer. A maximum of three types of application program could be running on separate areas of the screen.

In developing its System Display Architecture, DEC has defined concepts such as "virtual display", "pasteboards" and "virtual screen". Application software for any of the concurrent tasks on the Vax is intended to separate windows, none of which has to be brought into view until required.

At the user level, "viewports" are set up to access the contents of the screen windows and generate a composite image. The only constraint on image manipulation is the size of the screen and its resolution: the Vaxstation 100 terminals were launched with 1088 pixels across the screen, and 864 vertically.

The high resolution of the Vaxstation screen compares favourably with that of other DEC graphics products - the VS11 display tube, for example, is 512 pixels square. The system is intended to bring DEC into the Tektronix marketplace, by emulating

Tektronix's 4014 screens. For more basic applications, however, Vaxstation becomes a VT100 screen - the two protocols even running in overlapping display areas.

Away from the rarefied atmosphere of engineering software are the swelling ranks of terminals offering "medium" resolution graphics. Six hundred by 450 pixels on a rectangular screen would be an ideal standard for devices running with business information systems and many technical applications; a market that Hewlett-Packard is attempting to reach with its HP2700 terminal.

This type of peripheral has a valuable role in reducing the graphics workload on a host computer. Manipulating technical data into graphical form on a supermini or even a mainframe blocks the system from more relevant activities. The HP2700, for example, stores incoming x-y co-ordinates as vectors in its own memory and converts the information into raster format for screen generation.

The HP 2700 is essentially a colour terminal with 512 by 390 points displayed on the screen. Panning accesses a virtual display area equivalent to 32K positions in either direction, while the zoom facility scales from one thousandth full size through to an enlargement factor of more than 60.

Industrial psychologists are quick to show that as the amount of data on a display increases, the ability of an observer to absorb information falls away.

The assortment of hatchings and shadings adopted for monochrome terminals goes some way to improving reception, but a surfeit of cross-hatched lines can prove as much of a distraction.

Partly in overcoming this problem, terminal suppliers have been turning to colour displays. Hewlett-Packard on its 2700 device, for example, provides a total of 4096

Laser machines can handle between 10 and 20 A4 pages a minute, irrespective of image density

different hues - although the user is limited to 16 of these at a time.

Where HP has gone further than many other suppliers in colour presentation is with its approach to colour selection. Red, green and blue can be blended to create tones required, or the user can select hue, saturation and lightness as the determining factors.

Below 400 pixels by 300, the graphics capability of a terminal becomes progressively more limited. The low resolution is particularly noticeable on lines within a few degrees of the vertical or horizontal: the stepped effect which results makes these devices unsuitable for all but the most basic charts and diagrams.

Being able to manipulate graphics data through a Vaxstation, or take expanded views of a personal computer board layout on an HP terminal, may add a new dimension to software applications. But unless there is a comparable standard of reproduction at the output stage, much of the impact created will be lost.

Outside the scope of computer peripherals is conventional photography - the only way to retain a perfect coloured image of a screen display. Laser technology provides a fair representation, however, but only in black and white. Laser printers, expensive substitutes for matrix and letter quality devices, resolve images at between 200 and 600 lines per inch.

The lower laser scanning rate is many times greater than that of a video display, but scrutiny of the output reveals that circles are still



Interest in the commercial world for systems that turn unexciting numerical data into piecharts, tables and graphs is growing.

being printed as polygons. A shortfall in quality is offset by the flexibility of most laser devices to merge text files and graphics into the same hard copy.

There is also the advantage of speed: laser machines reaching the market can handle between 10 and 20 A4 pages a minute, irrespective of image density.

Laser printers trace their origins to photocopying technology, like the electrostatic plotters now widely used for the output of technical drawings. Resolving images at the 200 dots per inch level, devices such as the Calcomp 5000 series produce an output comparable with that from a laser printer, but with only a fraction of the throughput.

Constructing an image from continuous lines produces a superior image to anything assembled from dots. Pen plotters, accommodating up to eight different colours, achieve a high standard of presentation. Output speed falls rapidly, however, as the volume of information increases, while text production should be limited to titles and legends.

Hewlett-Packard inevitably produces pen plotters with systems matching each tier of its graphics computer range. But the company also has a graphics device based on thermal technology.

The HP7240A is a vector printer with an output on black or blue heat-sensitive paper. It is not dependent on drawing pens, so it can reproduce a monochrome image from an HP graphics terminal.

Driving a dot matrix machine to the limit of its specification can provide graphics output to an acceptable quality. The mechanical characteristics of the printer - whether successive passes of the print head can be interleaved, for example - will determine whether it is suitable.

Matrix devices are being joined in the marketplace by needle printers in which the data drives a row of pins to generate the image.

Needle matrix printers, falling steadily towards the price of daisy-wheel machines, are the best value among graphics output devices. But printer manufacturers may well have developed cheaper but more sophisticated graphics hardware by 1985.

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## PRINTERS AND TERMINALS

The cost of keeping a computer up and running will account for a rising share of DP budgets, writes David Casey

# Maintenance takes the rap

EVERY industry needs its whipping boy, and computing is no exception. There has to be someone, somewhere along the line, to take the stick when things go wrong. Manufacturers are sufficiently convinced of their own infallibility that they are never to blame for a system collapse.

With a trend towards suppliers offering hardware bundled with third-party software, it is no longer good politics to level criticism at the software house. Since the customer signs the cheque at the end of the day, the fault can never lie with him. And so the only target left is maintenance.

Responsible for everything from cleaning the VDU screen to diagnosing subtle errors in multi-layered programs, the main-

tenance sector of the computer industry really does play a vital, if somewhat covert role.

The user assumes that a fully maintained installation is the norm — that the heads on the disc drives can read and write data 24 hours a day; that the printers will keep on working after the month's statements have been output; and that a complex program is 100% free from bugs.

Analogous to the intensive care service of a hospital, total support can be provided for any system, however small, but at a cost which may not be warranted by the application. How large the bill will be for maintenance depends on an array of factors — not the least significant being the complexity of the installation and the amount of

response time demanded.

For any given level of support, there is a finite cost; one to be set against the loss that would arise if a system were not up and running through mechanical breakdown or software collapse.

End-user prices of business systems seem destined to continue falling — at least during the first six months of 1984. Maintenance charges, which are based on the increasing cost of skilled technicians, cannot fall at the same rate. The cost of keeping a computer up and running will therefore account for an increasing share of DP budgets.

The end user either accepts the extra cost, or tries to make do with a lower level of support. High-budget prestige installations run-



GOULD... "Scope for co-operation both at a technical level and in training."

ning a bank of mainframes or superminis can absorb the overhead, but the newer generation of small system users will attempt to circumvent the expenditure.

The introduction of distributed processing systems and microcomputers marks a change in emphasis on maintenance requirements. While the large DP user has been prepared to consider an in-house solution, such an approach would not be economical under present conditions.

Far greater reliance will be placed on manufacturers' service departments and the independent maintenance organisations.

Under pressure of rising costs, there is an incentive to re-assess maintenance requirements. While judicious economies can be made, there is an irreducible minimum below which standards cannot fall without jeopardising the business. It is a case of knowing which corners to cut, and when.

The printer is certainly one area where there is no room for penny-pinching. Electromechanical devices, dot matrix printers and letter quality machines are the Achilles' heel of any computer installation. Even minor faults, such as mis-alignments in the paper feed or mis-timing of the printing head are immediately obvious to the user. If the fault is allowed to continue uncorrected, there is a risk of permanent damage.

Mills Associates is a company with a vested interest in printer maintenance, through its third-party work on systems from ICL mainframes down to Commodore micros. John Chapman, the opera-

tion manager, noted a trend in printer sales policy. "It is becoming increasingly common for computer manufacturers to sell their machines without an output device. While this ostensibly leaves the user to select the best printer for an application, it does avoid complications for them over an inherently unreliable piece of machinery."

Reaction from small system users to the cost of annual maintenance contracts is that the service organisation does relatively little for its money

tions manager, noted a trend in printer sales policy. "It is becoming increasingly common for computer manufacturers to sell their machines without an output device. While this ostensibly leaves the user to select the best printer for an application, it does avoid complications for them over an inherently unreliable piece of machinery."

users are likely to shop around for the cheapest maintenance contract they can find.

Aware that inexperienced or under-resourced operators could tarnish the reputation being gained by the more responsible service companies, the CSA has set up a third-party maintenance group.

The chairman is John Gould, who sees the group as a representative voice to government and industry. But how could 14 independent companies — many competitive with each other — work together? Gould explained.

"There is scope for co-operation: both at a technical level and in training. Several joint agreements have already been signed, where a company is not represented in an area, but has an obligation to maintain a system. Co-operation on spares is another major area open to us."

What is lacking from the brief, however, is any formal representation to manufacturers; a role which Gould sees as impracticable.

"With almost 120 different manufacturers' products supported by the members, the task would be impossible."

Computer users are perhaps more concerned with the standards that can be set through such an organisation. The code of conduct and briefing notes published by the group, and which outline what a customer should look for before entering into a maintenance agreement, are a step in the right direction. A supplier falling short on professionalisation would risk being censured by the CSA and expelled from the association.

CSA sanctions apart, there is a strong argument in favour of users buying their maintenance contracts from suppliers recommended by manufacturers. There may be no financial savings, but the threat of losing the vendor's goodwill is a sufficient incentive for

## PRINTERS AND TERMINALS

# Spelling it out in Arabic

Hardware is no longer holding back software. The cheap laser printer is now awaited, says David Casey

WITH one quarter Mbyte of memory on even the least sophisticated business machines, software designers are no longer constrained by computer hardware. High density Winchester disc storage and graphics-quality video displays ensure that the creative talents of system designers can be used to the full.

It is only at the output stage of a computer system that the limitations start to appear. Until the laser printer — with its 90,000 dots per square inch scanning resolution — falls to a quarter of its current price in the market, electromechanical impact printers will remain the link between applications software and hard copy.

For the majority of data processing applications, output quality is rarely a problem. Fixed pitch characters generated from a low-resolution dot matrix will suffice for all but a small proportion of user requirements.

Adding an element of text to the application calls for a higher standard of presentation, but this can be met by the increasing number of daisywheel and ditherwheel machines. Where perfection is the

have to accommodate as many as four different shapes for certain letters in the Arabic alphabet.

Early word processors allowed one keystroke for each symbol, as on an Arabic typewriter. The operator had to make the correct choice of character to suit the context.

"Contextual analysis" is the software routine which a word processor or business system undertakes automatically to adjust the shape of each character. Both the terminal and the printer have to recognise the context in which each letter appears and modify the characters without operator intervention.

Character shaping on the computer is achieved either as a feature of the application software or by modifying the operating system to support Arabic. The first route has been taken by companies writing bi-lingual packages for the IBM-PC, but it cannot restructure PC-DOS.

Falcon Systems of Maidenhead is one of a handful of systems houses which have extended the operating system — in this case CP/M-86 — so that software

software, but this cannot override the logic in the printer font chip. As Faez Tuma commented: "What we require is either less intelligence or more flexibility!"

Developing interfaces can prove time-consuming since there is no measure of standardisation in printer characteristics. Falcon, for example, spent a total of five months writing a suitable driver for the Qume, and was faced with a similar input for other printers.

Dr Tuma explained how the problem has been solved. "We have had to develop a new driver in three parts. The first is an application level, which accepts embedded control characters. A context layer on top of that is



The market for word processors and business systems in the Arab communities is worth £250 million.

specific to the type of printer — if the device cannot handle the analysis inherently, the routines are built into this stage.

The matrix printer resolution, which is an important consideration in the choice of an Arabic system, is even more critical for graphics software. The Trilux or-

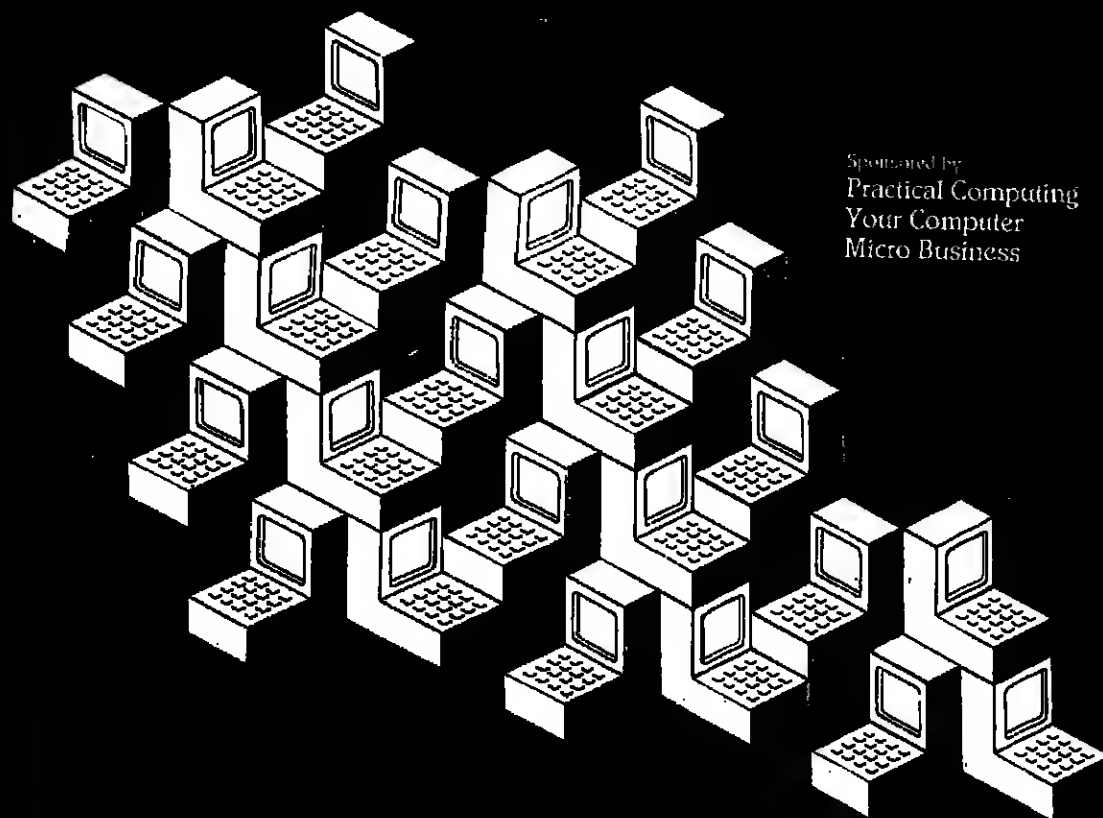
ganisation of Kingston developed Doodle, a multi-purpose graphics package, to run on Sirius and Apricot machines.

Doodle is essentially a graphics design tool, but one which accepts text merged into the drawings. Any printer selected to run with the package has to meet minimum specifications in either mode.

which would not make the system uncompetitive compared to other printers already on the market.

Doodle is essentially a graphics design tool, but one which accepts text merged into the drawings. Any printer selected to run with the package has to meet minimum specifications in either mode.

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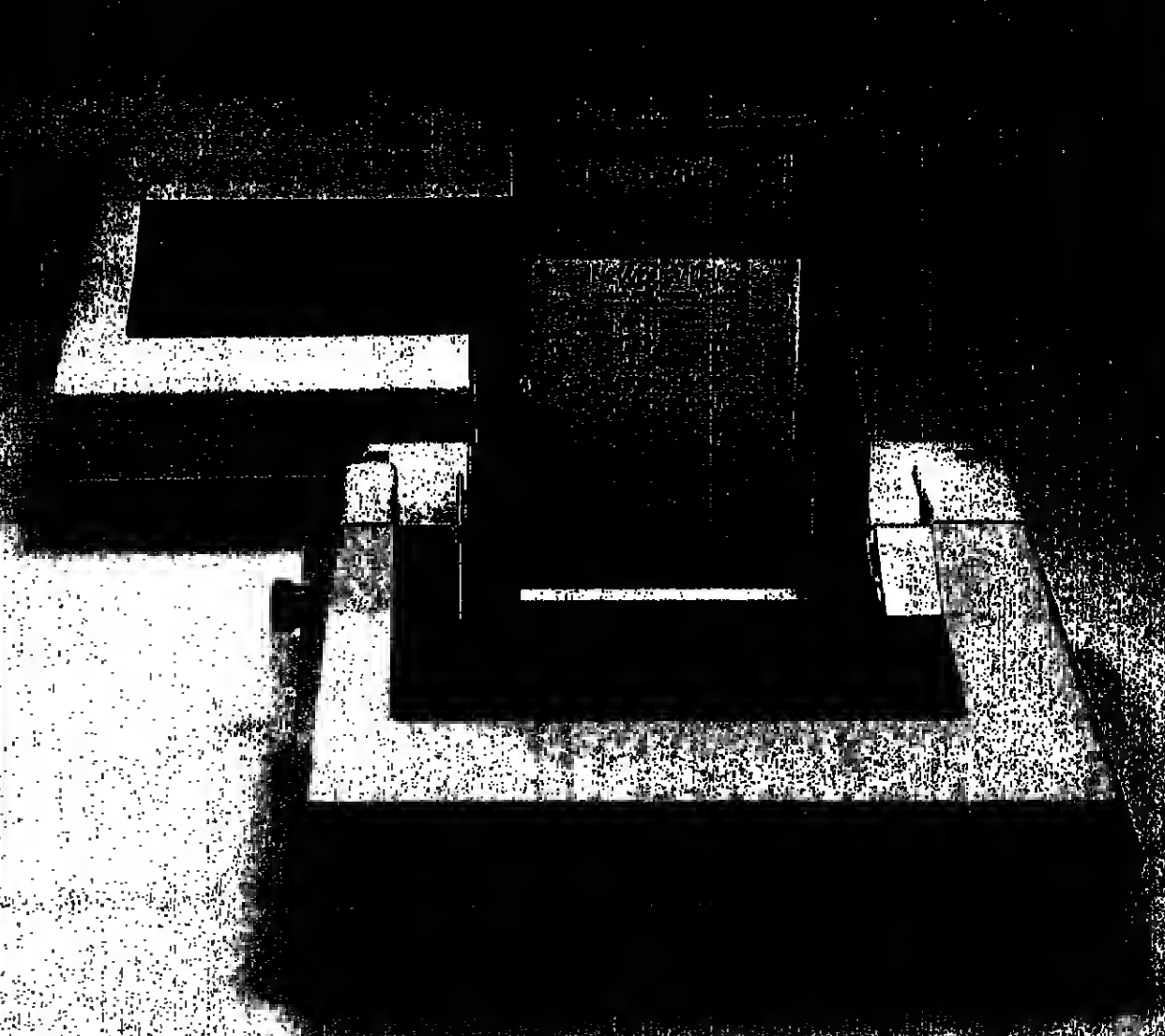
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## PRINTERS AND TERMINALS

A new peak of 1.6 million units have come into the British market . . . John Aczel analyses the latest trade figures

# Peripheral imports rise to all-time record levels



Peripheral imports totalled nearly 230,000 units during September, compared with less than 200,000 during June.

IMPORTS of peripheral equipment into the British market have continued to rise markedly and have been at a record level in recent months. In particular, imports of storage units as well as of terminals and data communication equipment have been growing rapidly, according to the latest trade statistics.

Overall imports for the peripheral sector amounted to nearly 230,000 units during September compared with less than 200,000 in June. And for the first nine months of the year, the cumulative figure has reached a record level of 1.6 million units.

In terms of value, however, imports have been level-pegging and amounted to £85.5 million. This was about the same as three months earlier, while the total for the first nine months of the year remained steady, at around £700 million.

Evidently, prices of peripheral products have continued to come down and, in September, they averaged £370 per unit; this was a considerable fall compared to the situation earlier in the year, when the average price was around £440 per unit.

Admittedly, any price comparisons of this nature should be treated with caution, due to the fact that peripheral products include a wide range of equipment of different kinds. These prices do not include wholesale and retail margins and are only given at the port of entry.

Thus, the ultimate user usually pays a higher price; nevertheless, the trend in the cost of imports sees the scene, and, evidently, even lower prices may be seen in the computer field during the coming months.

### Importers have been keen to reduce their prices for a number of products

These figures also suggest that foreign suppliers of peripheral equipment are willing to cut their margins, even though sterling has been quite weak against other foreign currencies, particularly the dollar. Competition has been quite fierce in the peripheral sector and importers have been keen to reduce their prices for a number of products, particularly for printers and storage units, during this period.

The US has continued to be the main supplier of peripherals and its sales have been well maintained at over £40 million. This accounted for over 45% of total deliveries during September, but increasing competition has been seen from a number of sources.



Competition has been fierce in the peripheral sector.

In particular, sales by West Germany have been progressing well and reached nearly £8 million, while those from the Netherlands have been steady at around £7 million. Increasing imports have been reported from some of the Scandinavian countries, especially Sweden.

In the case of Japan, sales have been fluctuating in value terms, following the upsurge which occurred earlier in the year and have eased during September. This dip, however, is believed to be only temporary, and higher deliveries by Japan are likely to take place during the remainder of 1983.

In terms of product groups, there has been an increase in sales of storage equipment, particularly for magnetic tape units. Their volume went up to 45,000 units, which was double that reported during June. Moreover, a significant increase in deliveries of terminals has been seen, while data communication products have risen appreciably, amounting to nearly 70,000 units during September.

British exports have also gone up but the rise has been more limited compared to imports. The total volume of sales abroad amounted to 73,000 units in September as against 60,000 in June, while the cumulative figure has been satisfactory, reaching over 465,000 units during the first nine months of 1983.

In terms of value, however, exports have been lower and amounted to £44 million in September. This represented a drop of 14% compared to June, while, for the first nine months of the year, the total was lower than expected, amounting to £370 million.

As in the case for imports, exporters have been lowering their prices markedly. In September, the average price of a peripheral unit exported was around £600 and this compared with about £800 three months earlier. Thus, significant price cuts have been occurring, especially for storage units and printers.

British exports have performed well in some markets, particularly

in the US. Deliveries to that country reached over £3 million, which was a record figure for September and represented an increase of 12% compared to June. In some European countries, higher sales have been reported, particularly in West Germany, where they rose 10% to over £10 million.

In contrast, in the Benelux countries, lower deliveries have been seen, while sales to France have been under pressure. The trend in exports to other regions of the world has been mixed and considerably lower deliveries have been reported to some of the Middle East countries, especially in Saudi Arabia. This market has been an important one for British peripheral suppliers, but, in September, sales fell to one of the lowest figures ever recorded, amounting to just over £200,000.

Deliveries of storage units performed well and exports of these products more than doubled in volume to 26,000 units. A useful increase in sales of printers was also recorded, but, for visual display units, the trend was easier during this period. For terminals and data communications equipment, an upward trend has been recorded in volume terms.

Nevertheless, in terms of value, they were under pressure and amounted to around £15 million in September as against over £18 million three months earlier.

As a result of the continued rise in imports, Britain's balance of trade plunged further into the red with regard to peripheral products. Thus, a gap of £41 million was seen in this sector during September as against a deficit of £35 million in June. The cumulative

deficit has also been very high, reaching £337 million during the first nine months of 1983.

In addition, a marked imbalance in volume terms has been reported, amounting to 156,000 units during September. This was a marked increase compared to June, when imports of peripherals exceeded exports by 138,000 units.

At the moment, there are no signs to suggest that this gap will be reduced to any significant degree, as imports are likely to continue to move ahead strongly.

Admittedly, exports have been performing better, and this trend is likely to continue, at least in volume terms. Higher sales to Europe will take place and some manufacturers of peripherals will take advantage of the strength of the dollar to improve their deliveries to the US.

	September 1983	June 1983	Jan-Sept 1983
	£000	£000	£000
Belgium-Luxembourg	1,327	1,483	11,477
France	1,665	8,591	63,481
West Germany	10,226	9,282	74,242
Italy	4,402	5,774	39,023
Netherlands	2,310	2,867	18,889
Norway	686	91	1,347
Saudi Arabia	225	2,517	12,211
South Africa	942	1,120	10,046
Spain	1,244	2,112	13,044
Switzerland	1,569	1,691	13,238
Sweden	2,197	2,761	17,946
US	3,998	2,715	26,354

Table 1 - British exports of peripheral equipment (by main markets)

	September 1983	June 1983	Jan-Sept 1983
	£000	£000	£000
Belgium-Luxembourg	1,373	1,749	12,377
Canada	1,168	467	5,747
Denmark	2,522	610	6,487
France	4,351	4,391	31,838
West Germany	7,989	7,824	67,003
Ireland	3,138	1,748	19,415
Italy	2,542	3,401	24,667
Japan	7,447	12,054	73,006
Netherlands	6,995	7,058	52,423
Spain	544	389	4,628
Sweden	1,959	1,798	17,095
US	40,527	41,422	356,634

Table 4 - British imports of peripheral equipment (by main suppliers)

	September 1983	June 1983	Jan-Sept 1983
	£000	£000	£000
Peripheral units	544	1,206	5,629
Disk storage units	10,343	9,102	70,425
Magnetic tape storage units	1,352	1,206	2,615
Other storage units	4,519	4,536	38,604
Printers	115	262	1,416
Readers and punches	12,616	17,199	123,584
Visual display units	835	1,092	7,860
Other terminals and consoles	13,942	17,378	118,742
Off-line data processing equipment	5	-	133
Punches, verifiers and calculators	611	508	5,019
Other equipment	-	-	-

Table 2 - British exports of computer equipment by product groups (by value)

	September 1983	June 1983	Jan-Sept 1983
	£000	£000	£000
Peripheral units	27,606	24,393	195,130
Disk storage units	3,588	3,076	33,547
Magnetic tape storage units	655	845	7,412
Other storage units	14,262	17,329	135,989
Printers	423	512	4,003
Readers and punches	10,111	11,408	92,947
Visual display units	3,326	3,706	29,313
Other terminals and consoles	25,549	24,714	208,049
Off-line data processing equipment	32	73	367
Punches, verifiers and calculators	821	864	7,802
Other equipment	-	-	-

Table 5 - British imports of computer equipment by product groups (by value)

	September 1983	June 1983	Jan-Sept 1983
	No.	No.	No.
Peripheral units	25,973	10,337	90,057
Disk storage units	360	380	3,460
Magnetic tape storage units	332	54	860
Other storage units	11,289	10,096	79,811
Printers	61	79	1,016
Readers and punches	15,200	20,584	143,574
Visual display units	2,241	2,957	15,614
Other terminals and consoles	17,785	16,366	132,288
Off-line data processing equipment	2	-	380
Punches, verifiers and calculators	505	308	4,267
Other equipment	-	-	-

Table 3 - British exports of computer equipment by product groups (by volume)

	September 1983	June 1983	Jan-Sept 1983
	No.	No.	No.
Peripheral units	43,040	51,625	371,402
Disk storage units	45,028	20,543	229,328
Magnetic tape storage units	336	5726	7,656
Other storage units	31,144	43,546	322,789
Printers	942	1,755	11,284
Readers and punches	29,804	35,482	254,290
Visual display units	10,481	5,428	53,423
Other terminals and consoles	68,657	37,824	346,841
Off-line data processing equipment	58	213	643
Punches, verifiers and calculators	774	1,530	15,602
Other equipment	-	-	-

Table 6 - British imports of computer equipment by product groups (by volume)

## PRINTERS AND TERMINALS

# Typewriter waits for its cue

The typewriter is being groomed for the starring role of terminal. Hugh Busby looks at the likelihood of success

WHY should anyone want to use a typewriter as a terminal? After all, there is already a vast range of terminals on the market, purpose-built for specific jobs.

A sceptic's view? Certainly the typewriter manufacturers would have us think so. An increasing number of machines currently or soon to be available display features such as communications interfaces, disc drives, screens and operating systems, which seem to savour more of the worlds of test and data processing.

Is this just marketing hype by the manufacturers, induced by fear of the predicted demise of electric typewriters and the booming sales of word processors? Or is the typewriter destined to play a star role in that long-awaited office of the future?

From the way typewriter manufacturers are hedging their bets, it seems unlikely that even they know the answer. The briefest survey of the products available reveals that nearly every possible technological development has been catered for, to some extent. Word processing, text and data entry, on-line data entry, or straightforward dumb printing under computer control - you can, in theory at least, do any of these on a typewriter.

Price range is equally comprehensive, stretching from the negligible to the exorbitant (with facilities to match). Entry level is a pretty remarkable £169.95. This will buy a Brother EP-22, an electronic portable which is small enough - and at about 3lb, light enough - to go in a briefcase.

Battery-powered, it offers a lot of facilities for the money, including a built-in RS232C interface which allows it to be used as an output printer with a wide range of micros.

At that price, the EP-22 is inevitably a lightweight contender.

### The typewriter is by no means prepared to lie down and die

As a printer, it might get the home computer user out of a jam, but it has no place in the office. The print mechanism is not designed for heavy usage, it has no facilities for sheet or tractor feed, accepts a limited range of stationery, and print quality from the 7x9 dot matrix is - well, no better than you'd expect.

More interesting from the business viewpoint is the newly-announced Brother EP-44. Similar in design to its junior version, and still reasonably priced at around £250, its main feature is two-way communications, again using the RS232C interface.

It is more rugged and versatile than the EP-22, has a 4K text memory - holding about two A4 pages - text editing, and a letter quality 18x24 dot matrix.

The EP-44's most obvious application is for the businessman working away from the office who needs to transmit documents back to headquarters, or gain access to a computer.

While the two Brother portables have the field more or less to themselves for the moment, in the realm of office typewriters the competition is already well established. Nearly all leading manufacturers now provide interfaces and various add-ons for at least some of their machines. Among them, the Olivetti range is representative of current developments.

Olivetti has for some time been offering an add-on interface for its best-selling ET 121. By the end of the quarter it will have extended the option to all machines in its ET and Praxis ranges. Prices not

This gives all-in prices from about £700 to £2,000.

Olivetti's line of development can be gauged from its recent announcements. An upgrade of the ET 121, the Octet 121, comes with up to 4K of memory and communications protocols KSR or MSR terminal. This approach is being adopted by other manufacturers including Facit and Hermes.

The ultimate weapon in Olivetti's armoury is the ETV 300 - in effect, a word processor without a keyboard. Based on a Z-80 processor, it has a 32K memory, twin 5 1/2in floppy discs and a 12in screen. For a keyboard you use - unsurprisingly - an Olivetti typewriter.

Other manufacturers are following similar lines of development, adding their own individual variations.

Ericsson, for example, has decided to address the budding teletext market with the first BT-approved teletext terminal, in the form of a modified and upgraded Facit typewriter. At present it costs £2,200, plus another £300-£1,200 if you want discs.

In considering typewriters as alternatives to purpose-built terminals and word processors four criteria spring to mind: cost, durability, speed and ease of use.

On cost the typewriters don't appear to do too well. In too many cases, upgraded machines and add-ons seem unacceptably priced by today's standards. A top-of-the-range typewriter costs over £1,500, and prices for serious office machines start at about £500 for a standalone machine. Compared with this, for about £700 you can buy a screen, keyboard and printer, which will allow you to access the full power of your computer - assuming, of course, that you already have one.

When typewriters are upgraded to word processors, the equation becomes more complex. Prices tend to be more equivalent to standalone word processors, but detailed investigation may reveal significant differences. You won't get communications facilities at present, and you may not get all the features you would expect from a purpose-built WP.

On durability and speed, too, the typewriters seem to compare unfavourably. Typically, the duty cycle, or MTBF, of a typewriter needs to be about a quarter that of a printer terminal, though there are one or two notable exceptions. Similarly, printing speed for a typewriter used as an output printer tends to be about 20-25 characters a second, compared to 40 or more cps for a similar daisy-wheel print terminal.

Ease of use must depend to a large extent on the user, but the typewriter again clearly has its disadvantages. The typewriter keyboard is unsuitable for use as a data entry terminal because it lacks a separate numeric keypad, and equally for word processing, since it lacks cursor controls and the full set of function keys to which the WP operator is accustomed.

However, manufacturers would hardly have invested development funds in such a wide range of equipment which stood no chance of success.

One person who argues strongly the case for extending the use of typewriters is John Bayliss, chairman of the Information and Word Processing Association.

While conceding the limitations of typewriters as data entry terminals and output printers, he considers they have a useful role as input devices to word processors. His argument is largely ergonomic. No two keyboards, he points out, are exactly alike, and a typist who has become accustomed to a particular layout will almost

Bayliss illustrates this from experience in his own office at accountancy Moore, Stephens & Co where four typists, all with their own typewriters, share a single word processor.

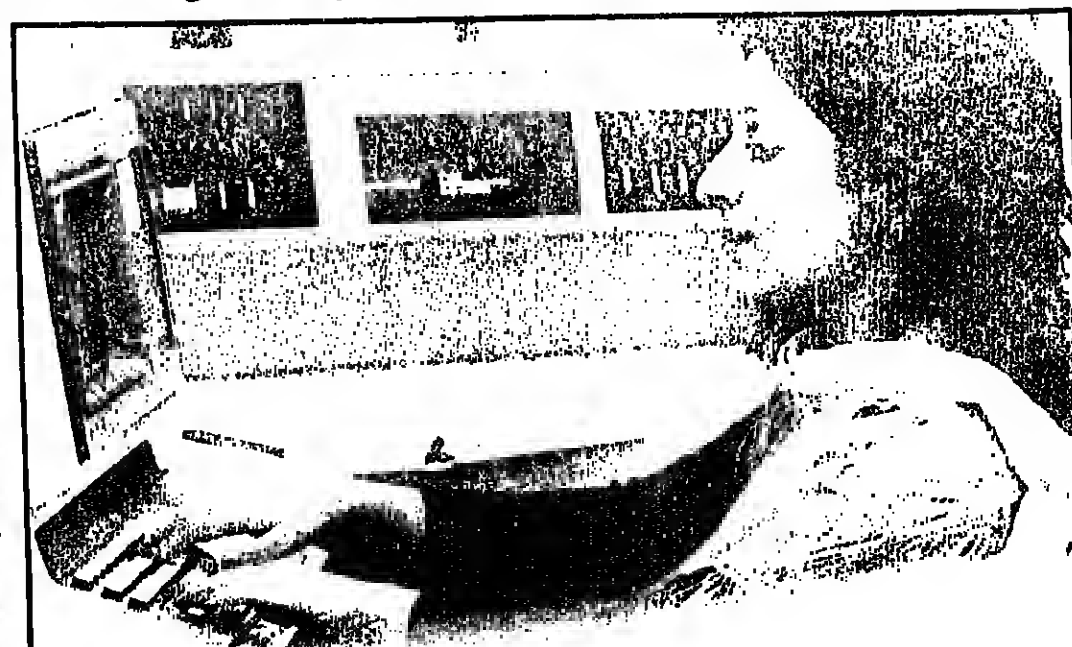
Throughput on the word processor, he says, is much slower because only occasional use is made of it, and a re-learning process takes place each time.

To this situation, he points out, if the typewriters have interfaces it makes sense to link them with the word processor. They can then be used for the bulk input of text, and only the editing needs the WP.

This may prove to be an interim solution only and even so could lead to problems where heavy usage is envisaged. But clearly the typewriter is by no means ready to lie down and die in the path of word processors and micros.

The makers' ingenuity seems certain to ensure that it has a long life ahead of it yet.

Hugh Busby is a freelance journalist.



Typists almost certainly work slower on unfamiliar keyboard layouts.

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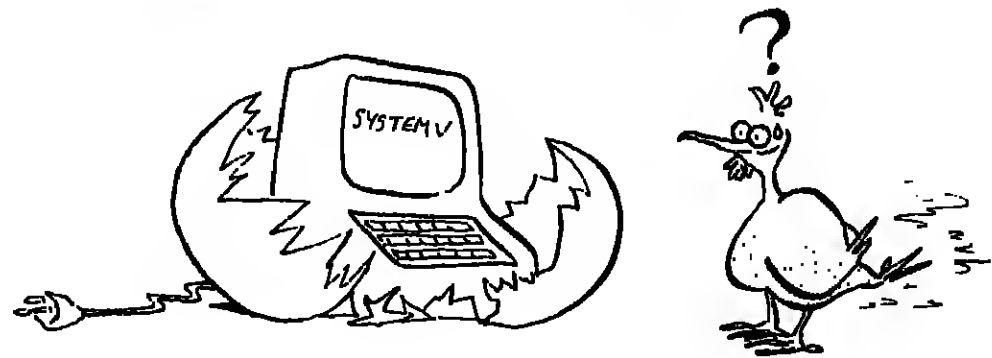
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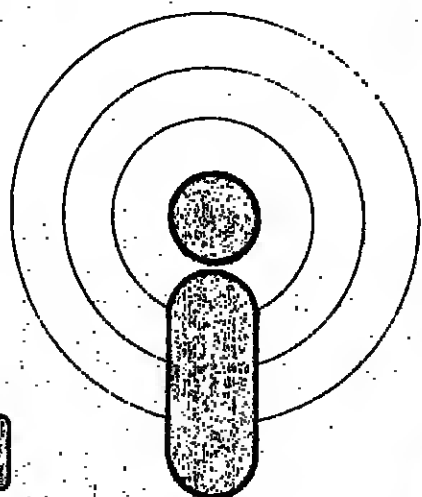
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## PRODUCTS

# Graftek cuts costs of CAD/CAM

LATEST addition to the Graftek range of computer-aided engineering systems available in the UK through Engineering Computer Services is a low-cost mechanical CAD/CAM system called Comet. It is based on Gould SEL hardware with a 32-bit CPU architecture.

A feature of the hardware is that it can operate in any normal office environment. There are no additional costs involved with the installation of air conditioning, temperature control, etc.

Another advantage of the new modular system is its ability to be expanded from a single workstation installation up to 12 workstations without making the initial hardware and software obsolete.

Potential users who previously could not justify the initial investment in a high level system can now install CAD/CAM with minimum initial costs and expand as needs arise, says Engineering Computer Services.

With Comet, the first-time user is able to obtain a practical system offering 3-D mechanical design capabilities for less than £100,000. Then, as the workload dictates, the system can be extended by the addition of various software packages or further terminals.

Comet is fully interactive and can be used by personnel with no formal computer training. The

basic hardware comprises 32-bit CPU with one Mbyte main memory; 160 Mbyte Winchester disc drive; 45 Mbyte cartridge tape unit for disc back-up and archival storage and the recently introduced Meteor intelligent colour workstation with high resolution, flicker-free and glare display.

Software provided for the basic system is Graftek Geometric Modelling Software (GMS) for two- and three-dimensional mechanical design and draughting.

Facilities offered by the Meteor colour workstation supplied with the Comet system include local pan, zoom and drag, plus pick functions. These increase the speed of graphics manipulation and reduce processing and communications requirements.

The range of hardware options which can be supplied initially or for subsequent system expansion includes line printer, plotter, hard copy unit (either black and white or colour), additional main memory and extra storage devices, further Meteor workstations (up to a total of 12) and a voice input facility.

Additional software options cover the entire Graftek range of modular packages.

Engineering Computer Services (CW), Piccadilly, Tamworth, Staffs. B78 2ER. Tel: 0827 873300.

Future Computers' FX30.

## Storage for the Future

HIGH-SPEED mass storage is a new dimension for the Future Computers range of micros.

It comes in the form of the FX30 range with an integral Winchester hard disc, offering a storage capacity from five to 50 Mbytes.

Users will also be offered the option of integral tape back-up units, in place of the floppy, supplied through a £1.3 million deal between Future and Cipher Systems.

Price of the FX30 is around £3,000 for a single machine. "We believe this is the only micro of its type in this price range," says Bob Jones, managing director of Enco-System, which has an exclusive contract to distribute Future Computers in the UK.

The FX30 has a built in local area network facility as standard. Future Computers (CW), PO Box 306, Purley, Surrey. Tel: 01-683 0111.

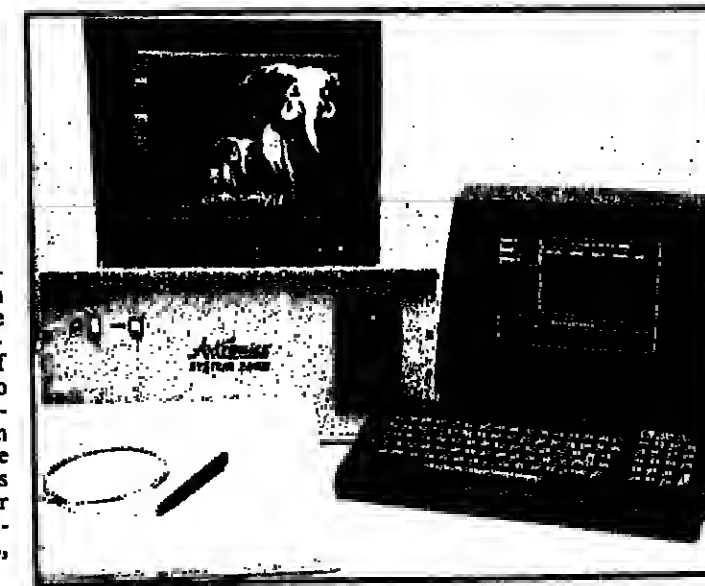
## Studio best seller makes its UK debut

THE Artron 2000 Studio Computer is about to make its debut. In less than six months it has become one of the best selling studio computers in the world for a number of reasons; it is simple to use and no knowledge of computers is necessary. The user just holds the pen and draws on the board but, at the touch of a button, the pen becomes an airbrush, technical pen or marker, with the ability to reproduce over 16 million colours, according to Graphic Products.

A complex sales graph can take the best part of a day to produce by conventional methods. With the computer it can take about 10 minutes and the image can be produced in full colour on 35mm slides, film or instant prints.

Changing colours can be done in seconds which is an invaluable aid in packaging, concepts, layouts etc. It also has the ability to store, enlarge and reduce photos, layouts and illustrations.

Artronics, the US producer of



The Artron 2000 Studio Computer.

the computer, believes that "the Artron 2000 will revolutionise the graphics industry and the 'tools' which are currently being used."

Howard Posener, managing director of Graphic Products, London, the exclusive distributor for the Artron 2000, is of the opinion that the computer will have the same effect on the studios as the repro camera. This too, when first

introduced, was considered a luxury product but has turned out to be an essential aid.

The system is on sale only through selected graphic dealers employing specialist staff who can give full after-sales service.

Graphic Products (CW), 36 Manchester Street, London W1. Tel: 01-486 9802.

## System will time and datestamp automatically

SHELTON Instruments has introduced a Calendar-Clock facility for its Sig/net 2 microcomputer. It records the time, including hours, minutes and seconds; and the date, including day, month and year.

Calendar-Clock enables the operator to time and datestamp files and automatically records the date when the system is switched on.

It may also be used when sending a telex message via the computer to enable the message to be automatically transmitted at a time specified by the operator.

In addition, MCNOS, Shelton's proprietary CP/M compatible, multi-user operating system, has facilities for automatic datestamping of files.

Calendar-Clock is an optional extra module which may be included in a Sig/net system at the time of purchase. Alternatively it can be fitted to a system on the user's premises by a Sig/net dealer.

There is a variety of industrial and scientific applications where the Calendar-Clock module may be used, such as process control and work study. It is one of many modules that Shelton offers for OEMs to use when adding intelligence to scientific and industrial equipment.

The modules are housed in a vacuum-formed plastic case and can easily be interconnected by a simple ribbon cable to the Sig/net Ring.

The Calendar-Clock module is available to Sig/net 2 users from their appointed dealers and to OEMs from Shelton Instruments. The one-off cost of the module is £39.50.

Shelton Instruments (CW), 74/77 White Lion Street, London N1. Tel: 01-278 6272.

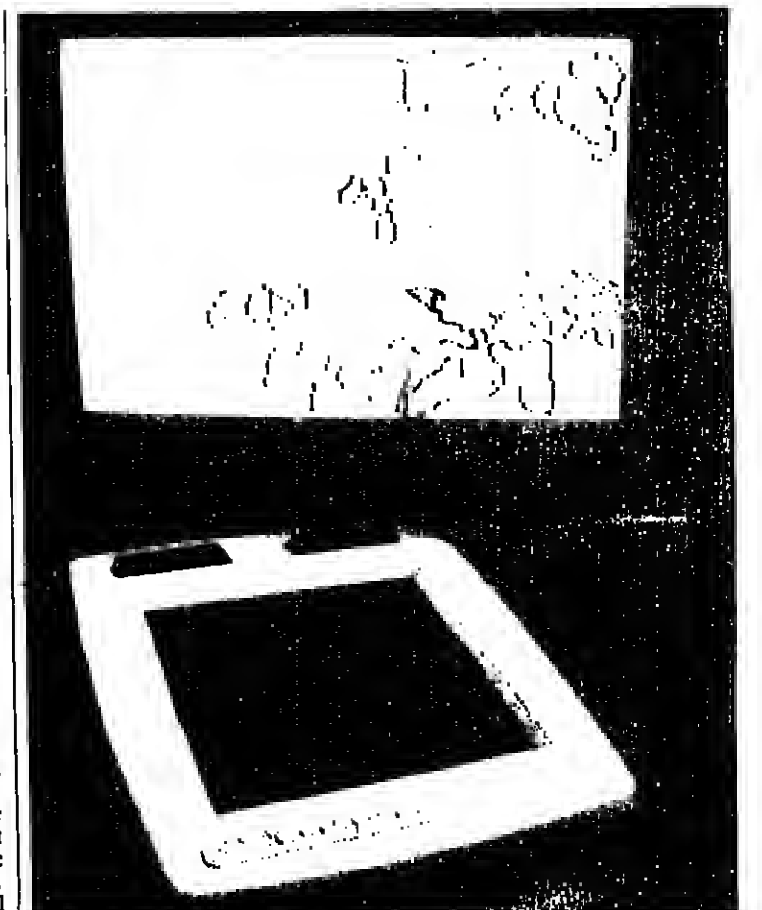
## Design processes automated

NOW available on Harris computers is Anvil 4000, a CAD/CAM package which has been designed to automate fully the engineering design and manufacturing processes.

Anvil 4000 provides a fully-integrated design, management information and manufacturing system for the total automation of product engineering. It originates from Manufacturing and Consulting Services (MCS) and is distributed in the UK by Impell Corp.

An important feature of Anvil 4000 is its comprehensiveness: the one system is capable of handling the design, design analysis, drafting and machining processes.

Harris Systems (CW), PO Box 27, 153 Farnham Road, Slough SL1 4XD. Tel: (0753) 34666.



The Koala Painter from Audiogenic.

## Pen is mightier than the board

KOALA PAINTER, a graphics tablet from Audiogenic for the Commodore 64, allows users to produce full colour drawings and illustrations directly on screen.

The package consists of a graphics tablet with separate stylus, disc-based software, and an instruction manual.

Connection to the 64 is simple yet the package enables novices to produce high quality full colour illustrations far superior to the commercial games software, says Audiogenic.

The Koalpad, which interfaces directly into the 64, is relatively small (8in x 6in x 1in) and lightweight (1lb) so that it can be held naturally in the hand. The active pad surface is a 4in square that is slightly recessed with two push-buttons located above it.

The unit is contoured so that it can be grasped easily in the left hand with the left thumb pushing one of the buttons, while the right

forefinger or stylus does the drawing.

The Koala Painter menu, displayed on the screen, is divided into three sections: commands, brushes and colour palette. The user is able to use the menu and with previously stored designs, before deciding on colouring.

A brush option allows the user to vary the thickness of lines.

The command section of the menu gives the user total control over the formation of his picture. Freehand drawings can be supplemented by integral facilities for lines, frames, boxes, rays, circles and discs.

A choice of eight brush sizes allows the user to vary the style of illustration by increasing or decreasing line widths.

The complete system costs £89.95 (including VAT).

Audiogenic (CW), PO Box 88, Reading, Berks. RG1 2SN. Tel: (0734) 595647.

## Add-in memory for Eclipse

AN ADD-IN memory board designed for the Data General Eclipse MV/8000 32-bit super minicomputer is announced by Mostek. The new card, the MK8033, can accommodate both 16K and 64K dynamic RAMs (SV only); the 64K version has a capacity of one megabyte and is compatible with both the 16K and 64K RAM versions of the MV 8000.

Additional features of the MK8033 include timing based on the MV/8000 system clock, four-way interleave on board, and separate read and write data paths so that one complete four-word cycle can begin before the previous one finishes.

During refresh a memory read cycle is performed to check for errors, which are then corrected by the memory controller.

Mostek UK (CW), 1 Valley Drive, Kingsbury Road, London NW9. Tel: 01-204 9322.

## Hard copy data camera

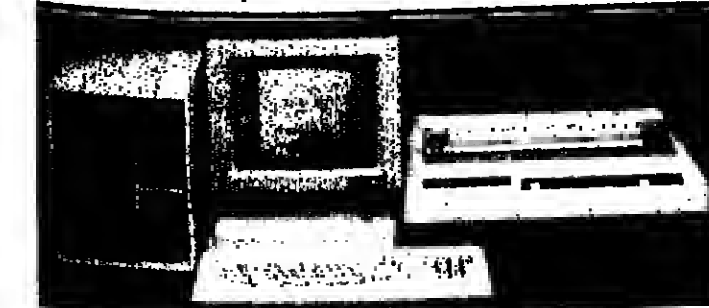
THE GDS-1000 hand-held Polaroid SX-70 hard-copy camera system costs £158, yet still produces brilliant colour reproduction and excellent monochrome resolution, according to Graphic Display Systems. It uses the automatic Polaroid SX-70 Alpha or AutoFocus cameras with a range of optical hoods fitting all displays.

The user simply holds the camera and hood device against the screen and presses the button. The film automatically appears out the front of the camera and develops automatically in about two minutes.

Graphic Display Systems (CW), Bright Haven, Robin's Lane, Loughborough, Leicestershire LE11 3BH. Tel: (0954) 81074.



The GDS-1000 Polaroid SX-70 hard copy data camera.



The Cardkey Pass 3000 security system.

## Mini-based security system

ASECURITY and personnel management system, launched by Cardkey Systems, the Pass 3000, is designed to provide a sophisticated alarm monitoring, security and personnel management service to medium-sized users.

The system is targeted at companies with up to 2,500 personnel. It is based on a modular minicomputer and comes with a desk-top operator console, a 10 Mbyte Winchester disc, and a single 1 Mbyte floppy disc.

Cardkey Systems (CW), 23 Stadium Way, Portman Road, Reading, Berks. Tel: (0734) 415211.







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## PRODUCTS

## Designed to fit on an engineer's desk top

APPLICON is launching additions to its Bravo! system. The first of these is Applicon's new 4620 desktop colour raster-scan workstation which is a colour graphics terminal, keyboard and tablet designed to fit on an engineer's desk.

The workstation is priced at \$21,000 and provides a range of graphics functionality for Applicon's CAD/CAM application software.

The workstation which occupies a 30inch x 21inch work surface, features a tilt and swivel monitor to suit operator preferences. In addition, the keyboard and tablet are combined into a single unit which fits in front of the terminal.

The new workstation offers complete graphics capabilities: the terminal has a 13-inch screen featuring eight colours, four graphics planes, and hardware-generated alphanumeric.

The desktop unit is plug-compatible with Applicon's Series 4000 VAX-11/730 and 11/751 graphics



The 4620 desktop colour raster-scan workstation from Applicon.

processing facilities and supports all of the new Bravo! 32 bit systems and application software. It can also be used with DEC VAX-11/790s. Customers can mix and match workstations on the same system, says the firm.

The 4620 uses Intel's 80186 16-bit microprocessor and includes 256K of program memory, expandable to 768K, as well as optional dual 1-Mb 5-1/4inch slimline floppy discs for off-line storage. It features 50Hz noninterlaced reso-

lution in 672 x 504 format and includes power-up resident diagnostics.

Applicon United Kingdom (CW), Regent House, Heston Lane, Stockport SK4 1DA. Tel: 061-429 7227.

## Wilcox micro suits builders

BUILDING contractors are the target for a new micro system from Wilcox Computers. The Wilcox 2000 is a new switchable eight or 16-bit micro with three software packages designed for estimating, costing and sub-contracting applications.

The company has only a 2% market share of computer systems in this industry, gained with its earlier systems, but company chairman Robert Shove said that an independent survey of the market by PA Consultants indicated that the system 2000 "had a bright future ahead".

The building industry has just come through a severe recession, said director Dennis Wrigley. "As a result, the margin for error in estimating is extremely small and the need for a computer system which can keep track of estimates and stocks is more obvious."

He said that the main problem with selling computers into this industry is ignorance on the part of company managers.

To help overcome the problem of management ignorance, Wilcox

offer unlimited training and back holding until users are familiar with the system. "A lot of thought has gone into making the software easy to use," added Shove.

The micro is a departure from those previously offered by the company, in that it uses industry standard components, including Z80 A and 8088 processors and the CP/M operating system, in place of in-house developments.

Internal management of the system is handled by a separate eight-bit 6502 CPU which also controls the 15-inch screen display.

Internal storage is 512 Kbytes which can be supplemented by either two 320 K5-1/4inch floppy disc drives or up to 10 Mbytes on Winchester disc. Hard copy is available through NDR or Epson printers.

The software is written in CISC Cobol though Shove said that the system would support any high level language.

Wilcox Computers (CW), Rackery Lane, Llay, Wrexham, Clwyd LL12 0PB. Tel: (0978-83) 4866.

PRODUCTS  
Daisywheel designed for the quiet office

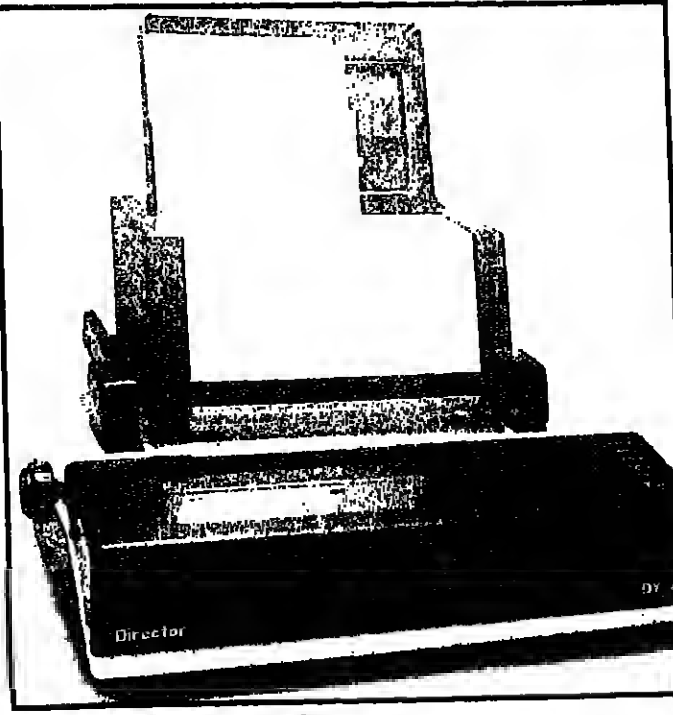
A 40 character-per-second daisy wheel printer, launched by Samsco Computer Services, the Director DY-40, brings together, says the manufacturer, a combination of durability, latest technology, performance and price to meet the demands for quality printers.

Significant features incorporated in the DY-40 as standard include Qume and Disbo compatibility, bi-directional printing with software selectable print pitch, built-in buffer for high throughput, choice of serial or parallel interfaces and programmable ribbon colour selection.

Paper handling provides a bi-directional feed system with automatic left and right margin alignment independent of paper width. Special noise absorption is also incorporated to ensure 62dBA levels for the "quiet office".

The Director DY-40 has a modular construction which allows for ease of maintenance and the unit has a built-in self diagnostic.

MCBF of the printer is 50 million characters and machined cast-



Samsco's 40 cps daisywheel printer.

ings support the print mechanism to prevent malfunctioning due to distortion.

The "easy load" printwheel has 96 characters as standard, a range of languages, different type styles and fully programmable line spacing.

Warranty and full back-up service is provided with special on-site arrangements tailored for specific needs.

Samsco Computer Services (CW), SCS House, 9 Fairways Industrial Estate, Dodworth Road, Windsor, Berks SL4 4LE. Tel: (07535) 54717.

## Debut of the well-trained workstation

XIONICS' Keystroke Procedure Language, KPL, for use with MasterNode and MicroNode office automation networks, aims to enable users to "train" their Xionics multi-function workstations to take a lot of routine work off their hands.

Keystroke memory facilities are not new. Word processor glossaries allow frequently-used key sequences (standard paragraphs) to be recorded, named, and called up at will. KPL takes this basic idea further.

The first advance is that KPL separates the facility from any particular application and makes it usable for all the applications available at the workstation. It can be used for word processing, electronic mail, personal computing, viewdata access, mainframe and mini interaction, and any combination of these.

The next series of advances enables procedures to operate "intelligently". KPL provides facilities for remembering words, sentences, rows of numbers, and for using these later in the procedure. It also permits these to be compared - with information on the screen, or with other specified data - so that the procedure can vary its actions in the same way as the user would.

Finally, the ability to be conscious of dates and times is built in. KPL procedures can examine and compare dates and times. They can vary their actions, or cause other procedures to be carried out depending on what they find.

KPL is available, at no charge, for use with Xionics 256K workstations.

Xionics (CW), Dumbarton House, 48 Oxford Street, London W1N 9LA. Tel: 01-580 5522.



The unwind/rewind unit.

## Perforating system

A COMBINED unwind/rewind unit with a programmable perforator which can be programmed to "miss and change" positions has been introduced by Hurley Moate. This system of perforating is regarded as suitable for cheque books. It can also be used for any other form of continuous stationery where perforation positions vary.

Hurley Moate (CW), 23 Backwellgate, Macclesfield, Cheshire. Tel: (0625) 616155.

## Low-cost graphics launch

A LOW-COST Qume terminal, combining full graphics capabilities with normal business computing features, is being introduced by ISG Data Sales.

Using single commands, the QVT 211 GX will draw arcs, circles, lines and boxes as well as provide emulation for the Lest Siegler ADM 3A/5, the Televideo 910, 912, 920 and 925 and the Hazeltine 1500.

The QVT 211 features a separate and independent graphics memory which can be displayed simultaneously with its alphanumeric memory on a thin, adjustable, non-glare, green or amber screen.

Compatible with the Tektronix 4010 and 4014 command sets, the unit is suitable, says ISG, as a preview terminal for CAD/CAM and Tektronix Plot-10 applications.

User programming of image size and location plus additional features such as variable display windows, relocatable origin and area fill is simplified in the QVT's own built-in graphics mode.

Other features of the QVT 211 include a menu set up mode instead of dip switches; a 7x9 character format; 12 function keys; and a 25th status line.

ISG Data Sales (CW), Wellington Industrial Estate, Basingstoke Road, Spencers Wood, Reading, RG7 1AW. Tel: (0734) 884666.



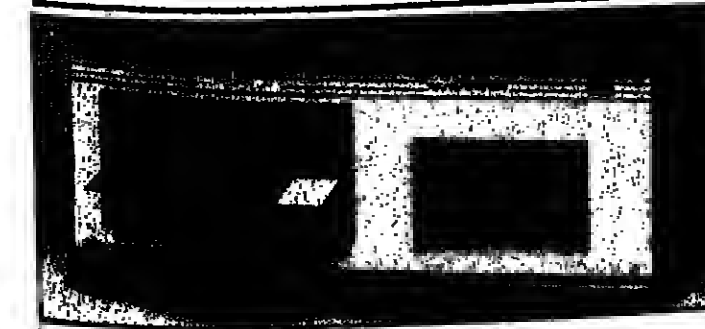
The MOS business micro.

## MOS micro arrives in the UK

THE MOS micro is a new business computer, designed and produced by MOS International. The system has been on sale in Australia, Africa and Europe for the past year and is now available in the UK through TKT Computers.

The processor is the industry standard Z80A with a 4 MHz cycle speed supported by 64 Kbytes of memory and an 8K ROM. The standalone workstation can be fitted, either at the MOS factory or on site, with a further 64 Kbytes of memory plus the master station upgrade board and processor to control a network of up to seven further intelligent workstations.

TKT Computers (CW), Road End Road, Oldbury, Warley, West Midlands.



The Micro-Dolphin microcomputer system.

## Dolphin leads the field

A NEW range of multi-user MPM-based microcomputer systems called Micro-Dolphin, manufactured in the Netherlands by Stock Control International, came out ahead of all the competition in a recent independent benchmark test.

The speed of the eight-bit Micro-Dolphin results from using a five megaHertz clock, 16-bit addressing and the elimination of wait states even during input and output.

Stock Control International (CW), 42 Upper Richmond Road West, London SW14. Tel: 01-876 0102.



Zilog's new 11 Plus system is worth examination.

## 11 Plus passes tests

ZILOG (UK) recently unveiled its new System 8000 Model 11 Plus.

Zilog's Unix-based System 8000 range starts with the Model 11 (£11,500) which serves eight users, has up to one Mbyte of memory and two Winchester disc drives each giving 19 Mbytes of storage.

The new 11 Plus (£14,600) maintains all these features and gives increased disc drive capacity. Users can now start with a 33 Mbyte disc and increase to 52 Mbyte or 66 Mbytes with the additional disc.

Zilog says that the 11 Plus is aimed at those users who already need 33 Mbytes capacity, yet cannot justify the cost of the Model 21 which gives up to 128 Mbytes.

The new 33 Mbyte disc drive on the 11 Plus utilises a voice coil actuator which reduces disc access time from 90 msec to 30 msec, making the 11 Plus the fastest multi-user Unix system on the market.

Zilog (UK) (CW), Zilog House, Moorbridge Road, Macclesfield, Cheshire SL4 8PL. Tel: (0628) 39200.



GBC Information Systems (GEGIS) is now revealing full details of its latest system - Centex - to be marketed in the UK by its sales organization Reliance Systems.

Centex gives low user costs, keeps communication separated from text preparation and reading; allows use of existing user terminals; provides a desk to desk capability, reducing overall message delays and costs; and gives flexibility of facilities available to particular users.

Reliance Systems (CW), Turnells Mill Lane, Welton, Northants NN8 2RB.

Digital's sensational new VT240™ terminal.  
Just look what it will be replacing.

To date, graphics applications have demanded either expensive workstations or a variety of upgrades for your VT100 or VT100 look-alike.

Now, with the sensational new VT240 text and graphics terminal, you can specify a single low-cost product to meet practically all your needs. The added bonus, of course, is Digital's quality engineering and field support.

The VT240 features 800 x 200 pixel resolution and two graphics planes to achieve four gray levels (colour is available on the new VT241).

Firmware is used to execute ReGIS commands and Tektronix 4010/4014 protocols, while generating full bit map graphics. Hence the VT240 will support a broad range of software including Tektronix Plot-10™, DECgraph, DECslide, ISSCO etc.

At MBS, we're stocking the entire VT200 range for fast off-the-shelf delivery. As Digital's most successful terminals distributor, we'll spare no effort to help you get the very best from those superb new products.

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MBS Rentals Ltd. FREEPOST Windsor Berks SL4 6BR. Telephone (07535) 68171. Telex 848845.

Also centres in Bristol, Glasgow, London, Warrington and Wrexham. VT100, VT240, VT241, ReGIS and DECgraph are trademarks of Digital Equipment Corporation.

Tektronix and Plot-10 are trademarks of Tektronix Inc.



Cunard International Hotel, London  
January 31 - February 2, 1984  
10.00 - 17.30 (closing 16.00 on the last day)

Especially for the computer professional

Peripherals '84 is the central event in the computer peripherals industry's calendar, because it offers the specialist visitor like you, an opportunity to see the very latest equipment on offer from the manufacturers.

Only at a show dedicated to peripheral equipment including terminals, printers, disk drives and plotters, could you see the wide range of cost effective equipment available today to the professional computer buyer.

The show's professionalism is guaranteed by the joint sponsorship of the industry's

own trade magazine, Systems International, and the Peripherals Suppliers Association. A simultaneous programme of seminars is held by the Peripherals Suppliers Association in recognition of the central place this prestigious exhibition holds in the peripheral industry. For full information of the seminar programme telephone Mrs Helen Gibbons on 0763 71209.

Both the show and the seminars are held at the Cunard International Hotel, Harpers Green, itself close to the centre of

London and within easy reach of Heathrow Airport. Peripherals '84 is organised by Reed Exhibitions which also stages other major computer related exhibitions including Compac, Software and the Computer Trade Show.

So if you're looking at the peripheral market make sure you visit Peripherals '84 and discuss your needs with specialist suppliers. It's the central event for peripherals.

Please send more information on Peripherals '84 Seminars

Name \_\_\_\_\_  
Position \_\_\_\_\_  
Company \_\_\_\_\_  
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# APPOINTMENTS

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19 x 3 cols £1470  
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Box nos. £5 extra. Address back to c/o Computer Weekly, Classified Dept., Quadrant House, The Quadrant, Sutton, Surrey, SM2 5AS.

120,134 ABC JULY-DEC 1983.  
129,335 SINGLE ISSUE AUDIT NOV/10th 1983.

PUBLICATION	CIRCULATION	SOURCE
Computer News	100,000	Computer News
Computer Weekly	97,226	ABC 1982 (last published figure)
Computing	110,920 124,635	ABC 1983 Dec '83 Spot Check 15th Dec '83

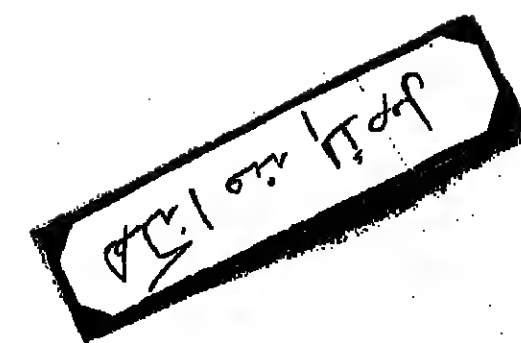
## What a source!

You know what they say.  
About there being lies,  
damned lies and statistics?  
Well fortunately, there are  
ABC figures as well. And they  
are in black and white for any-  
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So remember, although  
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tions that claim to reach  
computer professionals, it pays  
to check their sources.

### computing

The industry's most widely read weekly.



# Yes. What a source!

We hope this advertisement will set the record straight, once and for all.

Computer Weekly's ABC figure for July-December 1983 is 120,139 while Computing's ABC figure, over the same six month period, and not June-December as they have mistakenly quoted, is only 110,920.

What makes us even more confident that our figures are more accurate is the fact that each Computer Weekly reader is verified every 12 months, unlike our competitors who wait 3 years.

In addition, our circulation is updated with newcomers to the market from unique applications at Computer Weekly's own shows: COMPEC and the regional COMPECs.

So, to summarise, Computer Weekly has always been the best read journal in the business for reaching key job-hunters and purchasing decision makers at all levels.

And still is.

## ComputerWeekly

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Demand in the States for the best of British computer expertise exceeds supply—but there are snags. Without the help of a well-managed operation over there, your chances of a trouble-free transition are slender to say the least.

From our office in Massachusetts, we ensure that all successful applicants recruited through Computer Search and Selection are looked after like friends.

We need thoroughly experienced people, ideally, but not necessarily qualified to degree level to work on a wide range of career enhancing projects.

## NEW ENGLAND STATES

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**Software Development Manager**  
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**Analyst/Programmer and Programmer**  
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**Analyst/Programmer and Programmer**  
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**Analyst/Programmer and Programmer**  
With 3-5 years' experience + minimum 1 year's experience of IBM System 38. (Ref. US/16)  
**Analyst/Programmer and Programmer**  
With 3-5 years' experience. With one year's CICS or IMS. (Ref. US/17)  
**Programmer**  
IBM, CDC, etc. (Ref. US/18)  
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**Programmer/Designer**  
IBM, CDC, etc. (Ref. US/20)

Our permanent salaries range from \$27,000 p.a. to \$50,000 p.a. plus bonus and benefits. Contractor's remuneration will be in the range \$600-\$1,000 per week and can be tailored to suit individual requirements. This may include a car, accommodation and family air fare. There are significant tax advantages and medical health insurance is standard.

Please telephone Joan Lovejoy for further information and our free information pack, on Hemel Hempstead (0442) 40751, or write to her at Computer Search & Selection, Hamilton House, Marlowes, Hemel Hempstead, Herts, HP1 1BB.

## Computer Search & Selection

### COMPUTER PROGRAMMER

Thorntons, the well known quality confectionary manufacturers are looking for an experienced programmer. Candidates (male or female) should have considerable programming experience using COBOL, and familiarity with Hewlett Packard 3000 hardware would be an advantage. We offer an attractive salary, excellent working conditions and a full range of facilities. Please telephone or write for an application form to Executive Manager/Personnel, J. W. Thornton Limited, Derwent Street, Belper, Derby DE5 1WP. Tel: Belper (077 392) 4181.

## Thorntons

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Unique opportunity with UK subsidiary of growing Multi-National dealing with an exciting range of software. Three years' selling experience in software or hardware?

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### JOINT MATRICULATION BOARD Manchester

### SENIOR PROGRAMMER/ PROGRAMMER

Applications are invited from programmers with a minimum of three years' experience in COBOL for appointment to the full-time staff of the JMB. The work will involve the preparation of programs for the processing of GCE A-level and O-level examinations. A knowledge of IBM Assembler would be an advantage. For appointment at the senior level, experience in excess of the minimum of three years will be required and must include at least two years' experience of CICS and VM/CMS. The Board has an IBM 4331/11 operating under DOS/VSE and VM/CMS. The salary scale for a Senior Programmer rises by six points to a maximum of £11,815; the Programmer scale rises by nine points to a maximum of £8,975.

Further information and application forms from the Secretary (Staff W), Joint Matriculation Board, Manchester M15 6EU. Tel: 061 273 2565.

(7491)

American  
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up to  
**£12,500**  
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Major developments have given rise to these significant opportunities for skilled professionals in their careers with advanced environments.

## HONEYWELL DPS 6 Support

Experience of Level 6 Hardware and Software in a communications environment, coupled with good ASSEMBLER skills is essential. Additionally an exposure to TPS, DSS and COBOL would result in the ideal profile.

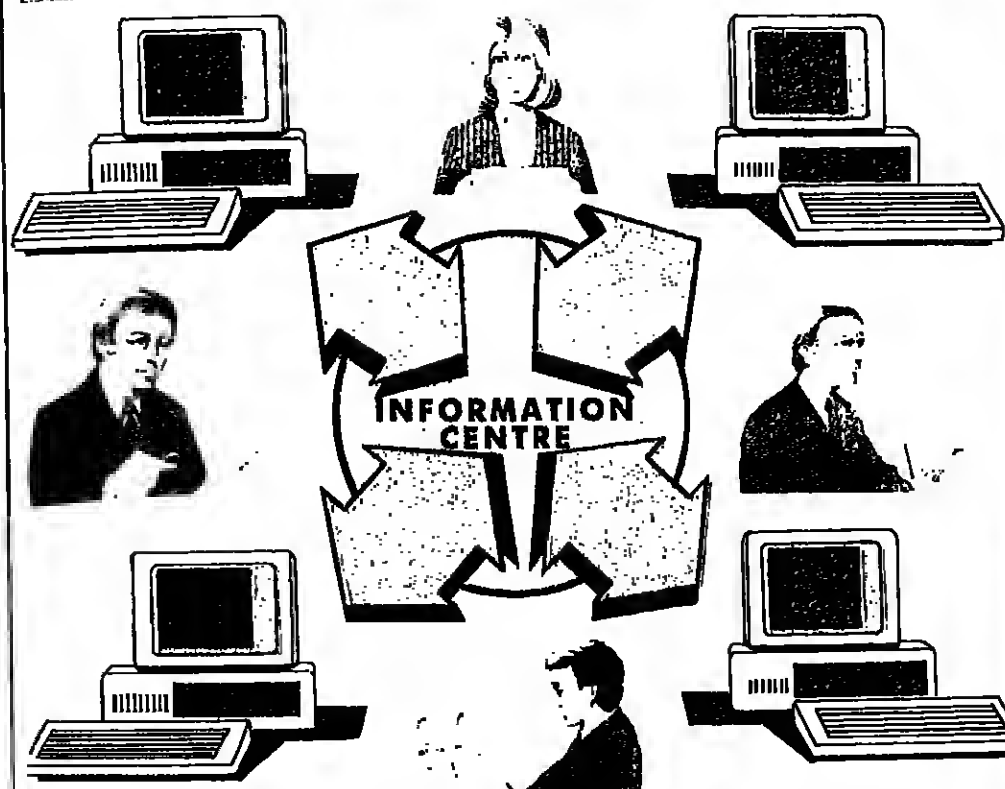
## Communications Specialist

Voice, Data, PABX, FAX, Digital Technology, SNA, DSA. If you have experience in any of these areas and a desire to work toward an integrated environment, this is an excellent opportunity to work at the forefront of Technology.

## DEC PDP11 Analyst Programmer

A new process control warehousing development utilising DEC Technology, requires a young professional to join the team. You must have RSX-11 and MACRO-11, with COBOL and FORTRAN being an added advantage.

## WORKING WITH PROFESSIONALS



The Information Centre concept grew from a need to provide users with a method for developing their own applications within a controlled environment utilising information and personal computing systems compatible with existing IBM architecture. We have established this concept, as ideas for new systems dedicated to specific applications can often be identified by professionals with practical experience of the job. In many cases however the relative simplicity of developing such applications does not merit the full project cycle. Instead the users can access the Information Centre for consultancy support and guidance on software tools along with educational and training support.

To ensure effective utilisation of the Information Centre we are building a team of specialists to link user requirements to the Information Systems Department. We now require an Information Centre Specialist to augment the team.

## INFORMATION CENTRE SPECIALIST To £14,000

Arthur Young McClelland Moores & Co. provide clients with a full range of accountancy services including consultancy. The firm has over 160 partners and more than 2,200 professional staff operating from 21 offices located throughout the country.

We are seeking candidates with five years experience of applications development and some knowledge of micros to fill the role of Information Centre Specialist.

Responsibilities will consist of providing a high level of expertise in all aspects of personal computers. This can include evaluation and selection of appropriate hardware and software tools and products, assessing the suitability of a product for a particular application, and providing consultancy and an application design service. Additionally the specialist will be required to develop and implement training courses and demonstrate applications for users and clients.

You should have five years' systems and programming preferably in an IBM 4341 environment and some applications experience on 16 bit micros, using BASIC and MSDOS or PC DOS operating systems. Excellent presentation skills are necessary along with the ability to relate the Centre's services to all users. Knowledge of IBM's software tools such as DOSF, DISOSS, GDDM or APL products such as ADRS, PCF would be an advantage.

Location: London

For further details including company information please ring Francesca Drinkwater or return the coupon below.



**Arthur Young McClelland Moores & Co.**  
A MEMBER OF AMSA IN EUROPE AND ARTHUR YOUNG INTERNATIONAL

**D.P. Recruitment**  
SERVICES LIMITED

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# Action!

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D.P. Recruitment Services, part of the Duport group, is a leading international consultancy with a commitment to providing quality services to a continually growing base of blue chip clients. Challenging opportunities now exist for additional consultants to participate in the substantial growth and success of our organisation.

## RECRUITMENT CONSULTANT £ Negotiable

The person we are seeking will have a recruitment agency background or will currently be working within data-processing and possess the desire to develop their career within a highly rewarding industry. Most important will be the ability to communicate effectively at all levels in a stimulating but demanding environment.

## CONTRACT CONSULTANT £ Negotiable

To keep pace with client demand for contract staff. We now require an experienced contract consultant to take a leading role in establishing this new division. Considerable scope exists for the successful applicant to build their career in line with this divisions' growth and success.

## LOCATION: WEST LONDON

For an initial discussion in strictest confidence please contact Peter Kennewell on 01-567 5501 or write enclosing a full C.V.

**D.P. Recruitment**  
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**SENIOR APPOINTMENTS - £14K +****SALES SUPPORT CONSULTANTS****£14-16K + CAR + SUBSTANTIAL BONUS** **HERTS BASE**

Our client is one of the world's leading manufacturers of computing, telecommunications and office automation equipment. Operating directly in most European countries the company develops commercially orientated systems using hardware, software and networking resources appropriate to requirements.

As a result of expansion, and in preparation for the launch of a major new product set, we are now seeking to recruit additional pre-sales support consultants who will be based in Hertfordshire and provide support throughout the United Kingdom. Suitable applicants could come from a wide variety of backgrounds where analysis and project management skills are used but should have experience in one of the following areas:-

- Office Automation, LAN's, WAN's etc.
- Commercial D.P. systems
- Turnkey systems based on minicomputers.

The role, an unusually diverse one involving pre-sales systems analysis in order to understand customer requirements and formulate viable hardware/software solutions, also includes organising and participating in exhibitions and seminars, the preparation of major proposals, and project managing the initial phases of systems installation.

Ideal applicants will be those who can combine commercial experience and personal skills with a good level of technical competence. In return the company offers genuine career development opportunities (technical, project management, man management, sales, marketing etc), an excellent salary package and all the benefits associated with large companies such as BUPA and a generous relocation package.

For details of this outstanding opportunity telephone Kevin McCourt (0734) 596346 at our Reading office. Interviews will be held at several locations throughout the South of England.

**MCL**

27-29 Greyfriars Road,  
Reading, Berkshire  
Telephone (0734) 596346 (24 hours)

**McCOURT COUSINS LTD.**  
Computer Recruitment Consultancy

Chesham House, 150 Regent Street,  
London W1R 5FA  
Telephone 01-439 8288

**HOWARD European Opportunities**

Consultant/Software Engineer, Telephony  
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COBOL Programmer, short contract position

Holland  
Belgium  
Holland

Programmer, M68000 Assembler, 'C', real-time  
monitors

S/W Technical Authors, short + long  
assignments

Various Locations

Network Specialists + Instructors

Various Locations

S/W Engineer, process-control (chemical plant)

Holland

Systems Programmers, MVS+ JES3/MVS+ IMS

Germany

Systems Analyst databases, networks, etc IBM H/W

Belgium

Please contact in the first  
instance: Gertie Pettit on  
01-952 8092 (office hours) or  
01-868 0355 between 6-9 pm.  
Employment Business Section

Howard Organisation  
International Limited,  
Russell House,  
140 High Street, Edgware,  
Middlesex HA8 7BS

**Computer Manager****£13,000-£14,000 p.a.**  
**South East England**

Our client, a subsidiary of a major multi-national organisation, is a light engineering company operating in the medical services industry. The Company has its Head Office and main manufacturing site in the South East and outlets throughout the British Isles.

An experienced professional is now needed to take control of the Company's computer department, where an ICL System 10/220 is currently used for accounting and stock control. The challenge lies in the scope provided to update the present hardware, expand the applications into several new areas including production control, and also take responsibility for the private viewdata system that is currently being established.

To match our client's expectations you should have been involved, at a senior level, in both hardware and

software applications developments in relation to ICL systems. Ability to program in Assembler and RPGII is also essential.

The salary is negotiable and will be enhanced by all the usual big company benefits, including relocation allowances if applicable.

Please write, enclosing a full c.v. to: Confidential Reply Service, Ref. BMC 8917, Austin Knight Advertising Limited, London W1A 1DS.

Applications are forwarded to the client concerned, therefore companies in which you are not interested should be listed in a covering letter to the Confidential Reply Supervisor.

**Austin Knight Advertising****Unequalled in its range of job opportunities****Senior Systems Analysts & Senior Programmers**

As the result of continuing activities, a number of Senior Systems Analysts and Senior Programmers are required for the well established and successful data-processing organisation of the Samlesbury site of the Warton Division of British Aerospace Aircraft Group.

Successful candidates will join a team which is developing and supporting a variety of spares and order processing systems in an IBM machine environment operating under MVS, with SNA, providing access to a number of 3081 and 4341 mainframes. COBOL is the main programming language, with IMS DB/DC and CICS/DLI both being used to develop on-line and real-time applications.

Our specific requirements are for:

**Senior Systems Analysts** educated to at least HND/Degree level and with significant experience in a commercial analysis environment. Experience in the development and implementation of at least one major commercial system is required.

**Senior Programmers** educated to at least HND/Degree level and with significant COBOL programming experience, ideally in an IBM environment. Good working knowledge of IMS or CICS/DLI, while not essential, would be a strong advantage.

Samlesbury is the control and operating centre for the Warton Division's spares organisation, servicing customers throughout the world, and also has major production responsibilities. The site is in a pleasant rural area of Lancashire, between Blackburn and Preston and within easy access to motorway links and rail services.

Please write with full career details to:

Mr. A. Cain,  
Senior Personnel Officer,  
British Aerospace, Aircraft Group,  
Warton Division, Samlesbury Aerodrome,  
Balderton, Blackburn,  
Lancs. BB2 7LF.

174571

**BRITISH AEROSPACE**  
**AIRCRAFT GROUP**  
Warton Division**SENIOR APPOINTMENTS - £14K +****I.T. Office Automation-London**

When Henry Ford introduced his famous Model T, he also introduced an equally famous maxim; 'you can have any colour as long as it's black.' A maxim which when translated into modern day terms and transported into an office environment perfectly illustrates the single-supplier inflexibility of some office automation companies — but not Xionics.

Founded in 1978, Xionics has taken the lead in the concept of open interconnection in office automation systems, with the result that within a mere six years we've become a real force within the industry, winning many prestigious government and commercial contracts.

So where do you fit into this pattern of growth and expansion? The answer is simple, it is precisely because of this growth and expansion that we can now offer you the following opportunities.

**Senior Software Designer/Programmers**  
**£12-16,500****Software Designer/Programmers**  
**£7,500-12,500**

We are looking for some highly talented systems people to fulfill these vital roles within our Development Division. People not afraid to make a positive contribution to the design and development of Xionics' unique concept in the area of open systems interconnection, information architecture development and multiprocessor systems. We are looking for people with good ideas and good experience in the programming of microprocessors, while a knowledge of LANs, word processing software, communications or graphics would also be highly desirable.

**Systems Support Consultants**  
**£10-15,000**

Working within our Customer Service Division and backed up both by an established field Service organisation and an expert Development Division, you will be tracking down problems in complex systems and providing a quick response service to customers who rely heavily on systems availability. This will call not only for a dynamic comprehension of the subject but also an overall technological ingenuity gleaned from your experience in software/systems design.

**Distributor Support Executives**  
**£18-25,000 package + car**

These two tough, demanding and essentially rewarding opportunities will require you, from a base in Central London, to travel all over the U.K., dealing with our existing distributors and identifying and appointing new ones.

Reporting directly to the Line Network Manager, you should have had experience of dealing with distributors or OEM customers within the computer or an allied industry. You should be technically competent on the subjects of data communications, word processing and data processing and possess an all round business acumen preferably accrued from a good marketing background.

**Application Support Consultants**  
**£8-15,000**

We are looking for people to work within our Marketing Division as members of our small, expert team of Application Support Consultants. This is an exciting opportunity. With good experience, you will assist customers and distributors in identifying, planning and implementing applications based on the company's products. In addition you will also be expected to participate in other Marketing Division activities such as presentations, demonstrations, product planning investigations and the preparation of sales literature.

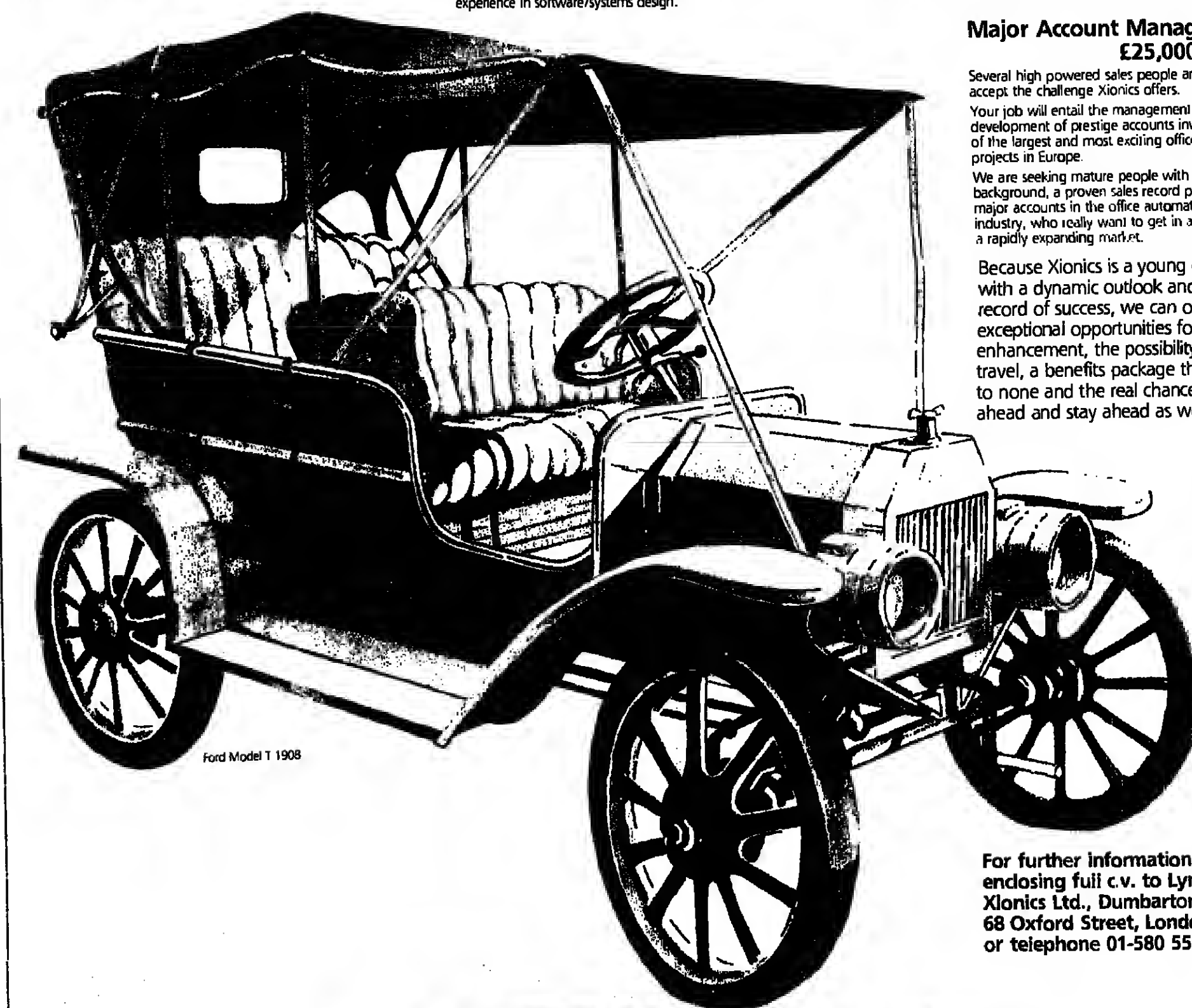
**Major Account Managers**  
**£25,000 package**

Several high powered sales people are required to accept the challenge Xionics offers.

Your job will entail the management and development of prestige accounts involved in some of the largest and most exciting office automation projects in Europe.

We are seeking mature people with a solid technical background, a proven sales record preferably on major accounts in the office automation or an allied industry, who really want to get in at the forefront of a rapidly expanding market.

Because Xionics is a young company with a dynamic outlook and a proven record of success, we can offer you exceptional opportunities for career enhancement, the possibility of overseas travel, a benefits package that's second to none and the real chance to get ahead and stay ahead as we expand.



Ford Model T 1908

For further information please write enclosing full c.v. to Lyn Fox, Xionics Ltd., Dumbarton House, 68 Oxford Street, London W1N 9LA or telephone 01-580 5522.

**XIONICS**  
**AN INTEGRATED OPPORTUNITIES EMPLOYER**



**MVS/XA Implementation****Holland****c. £2700/month**

We are seeking two experienced MVS Systems Programmers to undertake an initial 9-month assignment in Holland assisting with the expansion of an international DP network involving installation of two 3081's and implementation of MVS/XA with JES2. Working as members of a small MVS team in an unusually pleasant environment duties will include both XA implementation and support of the existing MVS/SP 1.3/JES2 based systems. Previous XA experience whilst useful is not essential but applicants must be able to work with the minimum of supervision.

2069

**DASD Package Evaluation****London****c. £2500/month**

We are seeking a senior MVS systems programmer for a 6 month assignment at our Client's twelfth IBM 4341 Data Centre. The initial task will be to evaluate available DASD space management software against the Client's needs, organise trials of appropriate packages, then plan and implement the final choice. There will be some pressure on this task because of the imminent arrival of 3380's in May/June. The successful applicant is likely to have a good understanding of MVS, and preferably will have already carried out package evaluations.

JB71

**MVS Systems Programmer****Home Counties****c. £2750/month**

We require an experienced Systems Programmer to act as the senior member of a team supporting MVS/SP 1.3 and JES2, recently installed under VM/SP on our Client's 3083. The task is to tailor MVS so as to improve the availability and performance of the production service which supports CICS, IMS DB and TSO, as well as to provide training and guidance to the other team members. The successful applicant will have a good understanding of MVS, and should preferably have some knowledge of the other products. The assignment is initially for 3-6 months with the possibility of extensions.

[7482]

CDS is an Anglo-Swiss Consultancy specialising in systems programming and DB/DC application development. For further details of the above positions or for an informal discussion on future European or UK assignments please contact: Mike Shute, our UK office Tel 0276 681261 (in through our answering service on 0276) 681266 during evenings/evenings.

Telex 858062

CDS Limited, 19A Park Street, Camberley, Surrey GU15 3PQ.

**IBM Systems Programming and DB/DC Specialists**

**Systems Programmer — Networking**

The Rutherford Appleton Laboratory, part of the Science and Engineering Research Council, supports scientific researchers in universities and polytechnics throughout the UK. The Computing Division provides large scale computing services and coordinates computing research programmes. There is a large IBM-compatible mainframe complex, and a number of VAX (VMS and UNIX), GEC, PRIME and PERQ computers.

A vacancy exists for a systems programmer with a strong interest in networking to work on a local area network development programme. The current developments use a variety of technologies including Cambridge Ring. The work is directed towards the adoption of national and international protocols such as IEEE 802 and ECMA.

Experience with more than one of the above machine architectures is desirable.

The appointment will be in one of the following grades, depending on qualifications and relevant experience:

Higher Scientific Officer £7,149-£9,561  
Scientific Officer £5,682-£7,765

The Laboratory is a friendly community with its own restaurant and sports facilities nearby.

Benefits include a local transport service, sick leave allowance and generous holidays. Some assistance with expenses incurred in house sale/purchase may be available.

Application forms from Recruitment Office, RAL, Science and Engineering Research Council, Chilton, Didcot, Oxon OX11 0QX. Tel Abingdon (0235) 445435 quoting ref VN 191.

Closing date: 16th February 1984

[7406]

**serc** Rutherford Appleton Laboratory

**AN IMPORTANT MESSAGE FOR CONTRACTORS!**

We are interested in hearing from all established contractors who are available for reassignment and also those who are intending to become freelancers within the next six months.

If your expertise is of a proven high calibre and your skills are not advertised then you are still most welcome to register with us as many of our clients' requirements are satisfied from our databank without the need to advertise.

Previous applicants are invited to update their registration.

Current requirements include:

**DATA GENERAL COBOL INFDS TPMS**  
DEC PDP 11, RSTS/E & BASIC+ or + 2  
IBM MVS COBOL, IMS DB/DC, TSO  
IBM DOS COBOL with CICS pref. CMS  
IBM OOS COBOL & CICS  
IBM PL/1 with IMS  
IBM 8100 OPX, COBOL  
ICL VME COBOL, OOS, IOMS TPMS  
CMC REALITY, QATABASIC  
HP3000 COBOL IMAGE VIEW QUERY  
NCR 9020, COBOL  
UNIVAC 110 COBOL, SSG  
VENTEK DATABUS DOS or RMS  
TANDEM Applications or Software  
ICL ME29 Software & Applications

**MINI/MICRO EXPERTISE**  
Any combination of the following:

INTEL CORAL  
ZILOG PASCAL  
MOTOROLA 'C'  
DECNET UNIX  
SEL 32 RSX 11M  
SYSTEM ASSEMBLER  
CP/M FORTRAN  
VAX RTL2  
CAD/CAM GRAPHICS

**SPECIALITY SKILLS**

IBM CDPICS — Holland  
OEC MUMPS — U.K. & Holland  
ICL SYSTEM 25 IAS pref. — U.K.  
RTL 2 — Holland  
INTERGRAPH — S. America

**OVERSEAS — EUROPE**

DATA ANALYSTS various disciplines  
UNIVAC 110 OMS, COBOL  
OEC PDP 11 or VAX all levels  
DEC MSM or DSM MUMPS  
IBM COBOL CICS or DL1/1

**OPERATIONS**

Immediate contracts for:  
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[7484]

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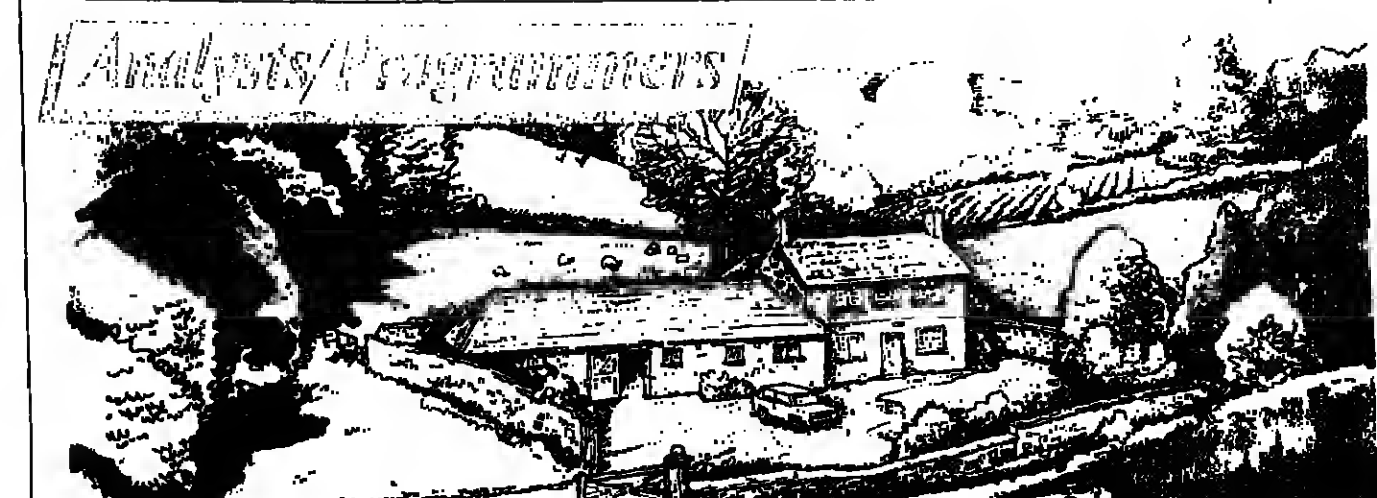
The successful candidate will have many years of experience in the UK scientific/technical market, both OEM and end user, and is expected to hold a senior sales management position in his current company.

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or call MR. HANS STEENMAN on 31 3430 14045

[7487]

**HOW GREEN IS YOUR VALLEY?**

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stimulation (important though that is). It offers modern shopping centres, easy commuting, excellent schools, an exciting social life, modestly priced town houses and country cottages plus, of course, the whole wealth of Wales on your doorstep...

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Please get in touch today quoting reference (CW)

Brian Foster  
BT DPE  
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2 Finsdon Road Cardiff  
CF1 3YA Telephone  
Cardiff (0222) 499038

**Data Processing Executive** British Telecom

**We have the name... Have you the talent!****Newbury — £Negotiable**

We are Micro Focus — one of the fastest growing software product companies in the world. We have a prestigious new headquarters building in Newbury, Berkshire, with additional offices elsewhere in the UK and in the USA.

We have an exciting product line enabling the implementation of COBOL on a wide range of micro-computers, backed up by a powerful set of development tools. In 1983 we achieved an extremely successful flotation on the Unlisted Securities Market since when the stock price has risen consistently.

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Our expansion plans for the next six months mean that we now wish to employ a number of skilled System Programmers and Software Engineers.

**Run-Time System Programmers:** Here you should offer good Assembler experience with a strong background in C/UNIX. You will have a degree plus 1-3 years in industry and ideally a background in run-time support package development.

**Compiler Software Engineer:** If you have an interest in compiler development here is a valuable opening — you will be developing a new compiler into a marketable product. You should have some compiler experience already ideally COBOL, and a high degree of self motivation with the ability to work on your own initiative.

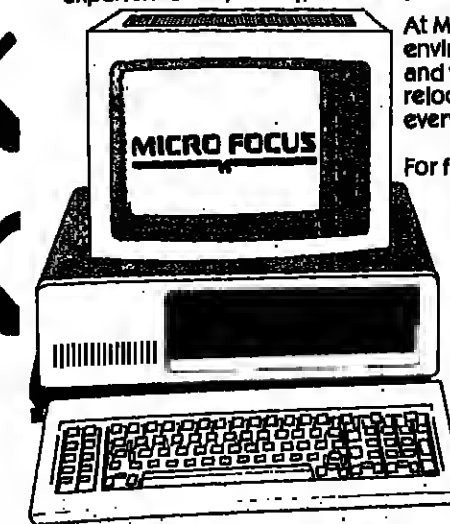
**Code Generation Software Engineer:** For this role we need a specialist — experienced in code generation techniques with the ability to implement a new product from scratch. You will need good micro Assembler experience and, ideally, familiarity with a number of different processors.

At Micro Focus we can offer you a bright career and an exceptional environment. Salaries will not be a problem for the right people and you will also enjoy the benefits of a subsidised staff restaurant, relocation assistance where appropriate, and an IBM PC(XT) on every desk.

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Miss Ann Jackson  
Micro Focus Limited  
26 West Street, Newbury, Berkshire  
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ISC Systems Limited is a subsidiary of ISC Systems Corporation in the United States of America, specialising in Integrated Financial Systems. ISC is a relatively young organisation which has satisfied a specific requirement in the systems market. Already, this multi-million dollar company is expanding its operations in Europe, South Africa, Middle East and has decided to base its World Trade Operations in the United Kingdom.

In order to launch this exciting new venture in the U.K. ISC Systems Ltd are looking for both Hardware and Software specialists who are capable of working in a demanding environment, making important decisions and are self-motivated.

The successful applicants would ideally be aged between 23-35 years and have at least 3-5 years' computer experience, and have the potential to gain a senior managerial position within the company in the future.

To become part of ISC's success, firstly you must be highly professional, decisive and capable of contributing to the company's future developments. You should also be proficient in at least three of the following:

- ★ Microprocessor software development (8 or 16 bit), preferably on Intel or Zilog equipment.
- ★ Financial application systems.
- ★ Mini/Micro computer systems.
- ★ Data Communications.
- ★ Good Assembler Knowledge.
- ★ Mini/Micro engineering experience.

A high salary in the area of £16,000, plus company car, generous bonus scheme, private health insurance and pension scheme will be awarded to the successful applicants.

For further details, please contact Steven Knowles-Baker on 01-370 2012/3, or alternatively, send a C.V. to him at N.K.B. Associates Ltd, 159a Gloucester Road, South Kensington, London SW7 4TH.

All enquiries will be treated in the strictest confidence.

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Reporting to the Commercial Director, the appointee will set up, organise and control the new information systems division, establish systems development and implementation strategy, and be responsible for the phased acquisition and installation of all hardware in over thirty locations.

Demonstrable experience in managing the systems development function in a large multi-location production and distribution organisation is highly desirable. Applicants should possess experience not only in developing effective custom built systems, but in investigating and successfully implementing software package solutions, to meet a broad spectrum of user information systems needs, on time and within budget. Whilst experience of directly managing a number of distributed data centres is not essential, the ability to establish and oversee an effective operational service function is vital. Age indicator is circa 40.

The location of the appointment is Surrey, and an excellent salary, company car, and benefits including relocation expenses as appropriate will be offered to the successful candidate, who will be unlikely to be earning less than around £20,000 salary already.

Please send a fully detailed CV, or write or telephone for an application form to ANTHONY SPURR, Manager, Executive Selection Division, quoting reference number GW1166, at the address below.

BIS Applied Systems Limited  
York House, 199 Westminster Bridge Road  
London SE1 7UT  
Telephone 01-633 0866

**BIS** Applied Systems

## SYSTEMS ANALYST

CENTRAL LONDON £12,000-£14,000

Our client, a leading international company, is seeking an experienced Systems Analyst. You will be involved in financial applications and will be based in a prime location.

Applicants should have a technical background in an IBM environment. A thorough knowledge of IBM operating systems is essential as is the ability to communicate effectively.

Ideally you will have approximately five years' experience in the data processing industry of which two years should have been spent in an analysis role.

The rewards are high for the right person. Not only an excellent salary, but also the benefits associated with a major company.

Contact Lesley Thompson or Melanie Lindeman on 01-499 7761 (daytime) or 0494 31025 (evenings) for further details.

**Lloyd Chapman Associates**  
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Salaries from £8K to £16K

S-COM is a highly successful software house with a growing client base of major international companies and government establishments involved in state-of-the-art developments. We have a professional approach to client relations and a positive career commitment to our staff.

Continued business expansion means that S-COM has immediate permanent vacancies for competent SOFTWARE ENGINEERS with the experience of any of the following:-

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The majority of work is carried out at client sites and candidates should be prepared to travel to these locations where necessary. S-COM salaries and benefits are highly competitive and opportunities exist for rapid career development.

For further details call Lawrence Mills or write enclosing a full cv.

**S-COM** Computer Systems Engineers Limited  
Tower House, High Street, Aylesbury, Bucks. Tel: 0296 32023  
Evenings after 7pm or weekends: 0296 33059

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Based in Scotland and North East England with a leading International Manufacturer.

### IBM CONSULTANTS

Our client requires experienced persons to project manage exciting new developments within existing IBM accounts. Applicants will have taken responsibility for such projects previously and will have supported or managed major IBM installations.

A thorough knowledge of IBM, CICS, DOS/VSE, VM, MVS, VSAM, SNA and 4300/308X Systems is required.

The salary is negotiable but not a limiting factor.

### BUSINESS/INDUSTRY CONSULTANTS

Our client requires consultants with in-depth knowledge of any of the following:-

- \*Local Authority—Finance and Housing
- \*Public Utility—Finance and Technical
- \*Retail and Distribution
- \*Manufacturing
- \*Engineering and Design

If you are an expert in any of the above areas at senior level, a good communicator and able to carry out business discussions with top management, suggesting solutions utilising the latest computer technology this is the opportunity and company for you.

An excellent remuneration package will be tailored to the candidate.

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Our client urgently requires Top line Project Managers with a detailed knowledge of mainframe systems and Networking plus practical knowledge of co-ordinating support teams to implement major systems.

These Managers will be significantly contributing both to the revenue and application development of these accounts.

The successful candidates will be working very closely with the Senior Management of Local Authorities and Public Corporations therefore professional stature and excellent communication ability is essential.

An excellent remuneration package will be tailored to the candidate.

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## MICROCOMPUTER SUPPORT ENGINEER MICROCOMPUTER WORKSHOP TECHNICIAN Birmingham

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Our Client now seeks an additional pre and post **Sales Support Engineer**, qualified to at least **HND** level, with sound micro hardware and software experience together with practical experience of mainframe communications. An element of European travel may be required for this post.

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Manchester M3 2ER  
061-833 0427

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Avenue Louise 327,  
Sole 4, 1050 Bruxelles  
018 322-840 7151/71

**HOLLAND**  
Willemsparkweg 92,  
1071 H M, Amsterdam  
010 3120-760847

# Exciting Career Prospects

Because of their continued expansion programmes, our clients have **URGENT** requirements for the following **KEY** personnel.

We have many other exciting opportunities for computer staff particularly **Programmers** and **Analysts**, and would be very pleased to hear from you if you are considering a career move.

Your first step to pursue these exciting career opportunities, is to telephone **ANTHONY HALL**, Computer Search & Selection, Hamilton House, Marlowes, Hemel Hempstead, Herts HP1 1BB. Tel: Hemel Hempstead (0442) 40761.

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Based in Middlesex, the person appointed will analyse financial systems, so it is imperative that he/she has a sound financial background. The current project involves the total update of their European General Ledger and on-line receivables.

**Programmers** c.£8-£12,000

Based near Redditch, our client is seeking a number of programmers with relevant **VAX/COBOL** experience with **FMS/VMS/TDMS**.

**Analyst/Programmers** c.£12-£12,500

Based in Middlesex the successful applicants will have strong **COBOL** experience, preferably on **IBM**. If **IBM** background, then you must have **DOS/VSE** and **ICCF**.

**Systems Software Specialists** £Negotiable

1 North of England 1 South of England  
Our client is seeking very high calibre specialists with relevant **MVS/OS** experience. Salaries will reflect the importance of these **KEY** positions.

**Programmers** c.£8-£13,500

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### Programmers Minis/Micros

**Berks.** to £13,000  
A successful company with a product having a special place in the communications and travel industry, requires several programmers at different levels to join existing development teams. Areas of relevant expertise include Z80 Assembler, PDP11 systems, UNIX and 'C', PLZ, Viewdata, CP/M, comms, and travel agency applications. Excellent benefits include special holiday discounts.

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A highly successful British company which is producing some of the most advanced systems in digital communications is seeking additional software specialists to work on a range of design and development projects. We would prefer to see previous experience in comms, but real time and systems software designers with assembler and high level language experience should apply.

### Liaison Manager

**Middx.** c.£20K + car  
Technical experience with DECNET and RSX11 are essential for this very attractive, senior position. Our client is installing a major network of terminals throughout the U.K. for a well known High Street retailer. Your job will require tact and diplomacy to work closely with the client and technical skill and firmness for liaison with development personnel.

### C.A.E. Consultancy

**London** £12K-£18K  
A number of experienced people with specialised knowledge of computer aided engineering are urgently sought by this client. Positions exist from mid-range designers to senior consultants who can perform high level sales support. This is a timely opportunity for you to join a leading systems house with an impressive reputation in industrial applications.

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Our client would like to meet candidates who are conversant with the DOS/VSE operating system and who have applications programming experience in COBOL. You would be expected to provide a user service on a proprietary package which is designed specifically for International magazine subscriptions. A knowledge of CICS and some assembler experience would be useful.

### Software Manager

**c.£20,000** + Exec. car & benefits  
If you are technically up-to-date with developments in systems software and have a proven track record in man management, preferably gained with a computer manufacturer or large systems house, this could be your perfect move. Our client is strengthening its management team and offers real scope for the long-term development of your career. Benefits include relocation where necessary.

### Mainframe Applications

**London** to £20,000  
A major systems house with an outstanding reputation is seeking several people from mid to senior in experience. Candidates will have had design responsibility for DB or TP systems in a mainframe environment. There are opportunities for Project management, Consultancy, Design, Training, Trouble-shooting etc. People with a positive attitude will find unlimited career opportunities in this very successful company.

### Engineer Supp. Mgr.

**Berks.** to £13K + car  
An ideal opportunity for an experienced field engineer to make a significant career development move. If you have previous supervisory experience and would welcome responsibility for prime sites in your region please get in touch. Our client will expect candidates to negotiate maintenance contracts, be responsible for selection and appraisal of engineers and to demonstrate good communications skills.

### Systems S/W Designers

**Beds.** £9K-£14K  
A major computer manufacturer with an impressive range of products is continuing to expand its engineering centre and requires more software implementers and designers. Projects cover UNIX systems, multi-access systems, compilers and development aids. Your experience should include design and development in assembler and use of a block structured language. Some Team Leader opportunities. Reloc. assistance.

### Mgr. Systems Installations

**Berks.** c.£15.5K + car  
Our client, a world leader in environmental control systems, requires a manager to control further development of existing software and organise the installation of complete systems on client sites. The successful candidate will have several years experience of project management, staff selection and customer liaison and will be primarily responsible for all software application projects taken on by the company.

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**Herts.** c.£16K + car  
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**Bucks.** c.£16K + car  
Continuing expansion in this highly successful manufacturing company opens the door for software people with experience in on-line D.P. systems, T.P. and comms. Candidates will be expected to assist clients with applications development, perform sizing as required and generally act in an account manager capacity. Excellent prospects and reloc. assistance where appropriate.

### Pascal M68000

**Berks.** £8K-£14K  
A number of software people are required to fill new vacancies created by expansion. Our client is developing specialised products for communications and broadcasting. These are M68000 based with most development taking place on a host DEC machine using assembler or Pascal. An O.S. specialist with M68000/VERSADOS skills would be of particular interest. A very attractive company.

### Product Support

**Herts.** c.£13K + car  
Our client has established an impressive lead in the provision of EFT systems for Tandem computers. These processing and switching systems are designed for users of all sizes. We would like to hear from well motivated people with experience of screen based applications. Candidates must have the appropriate appearance and manner for support work.

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## SOUTH OF ENGLAND

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IBM SYSTEM 26 - SAFES ANALYST/PROGRAMMER  
IBM DDS VSE COBOL APPLICATION PROGRAMMER  
IBM 4300 VM DDS VSE CICS COBOL SYSTEMS PROGRAMMER  
IBM SYSTEMS 3B MAAPICS RPG III ANALYST/PROGRAMMER  
IBM MVS COBOL ANALYST/PROGRAMMER

ICL  
ICL DRS CPM BUSINESS ANALYST  
ICL ME20 TME COBOL PROGRAMMERS  
ICL 2900 PASCAL PROGRAMMER  
ICL 2900 VME IDMS APPLICATION DESIGNER  
ICL MICRO UNIX PROGRAMMER  
ICL SYSTEM 25 - ASSEMBLER  
ICL 1900 PLAN PROGRAMMER  
ICL DRS CICS COBOL PROGRAMMER  
ICL 2900 VME IDMS TPMS COBOL PROGRAMMER  
ICL 2900 VME SCL TPMS COBOL SYSTEMS PROGRAMMER  
ICL 2900 VME SENIOR ANALYST  
ICL 2900 IDMS X COBOL ANALYST/DESIGNERS  
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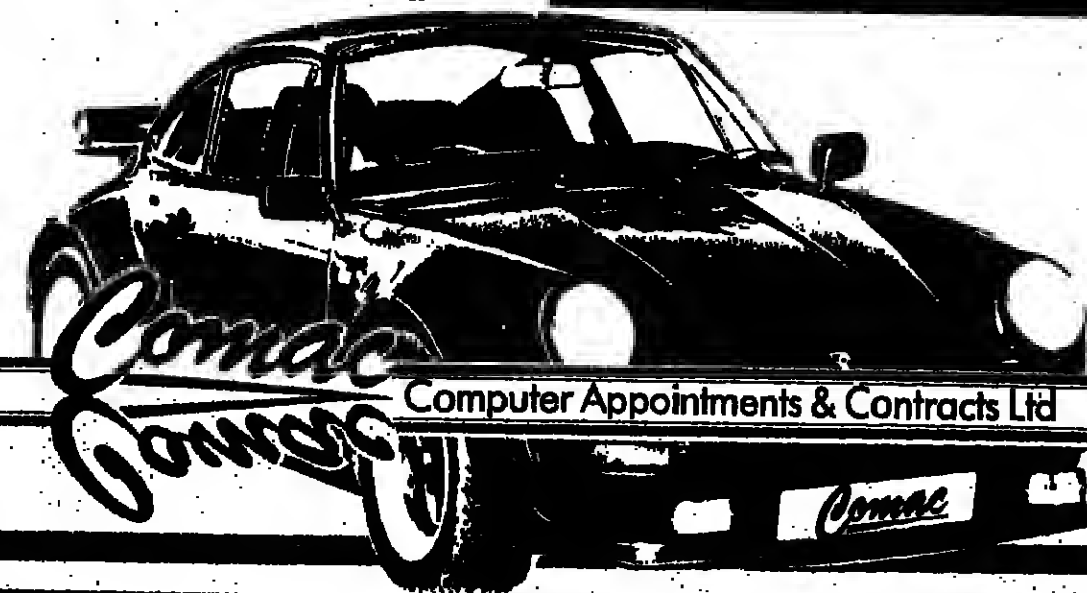
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Brecknell 2900 VME/2900 TPMS COBOL  
Edgware ± OOS  
Various 2900 SOL Writer  
VME 2900 convsn. to Teknics  
VME IOMS  
VME IOMS  
2900 VME/10MS TPMS  
Hayes VME/8  
Birmingham 2900 VME/8 IOMS TPMS COBOL  
London VME/8 or VME TPS COBOL  
London VME/VME/10MS TPMS COBOL  
Wiltshire Life Assurance or Unit  
Linked experience

Programmer  
Comms Specialist  
Consult/Prog.  
Systems Designer  
IOMS Designer  
Programmer  
San. Anal./Project  
Manager  
Project Manager  
Programmer/Proj.  
Leader  
Programmer/Proj. Ldr.  
+ Programmers  
Programmer  
Anal./Designer  
Progs./Anals.  
Prog. Team Leader  
or Senior Prog.  
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Consultant

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DOS Specialist  
Programmer  
Electro Engineer  
Programmer  
Software Prog.  
Engineers  
Systems Designer/  
Programmer  
Systems Consultant  
Technical Authors

## Other

Bracknell Small Systems  
London Banking experience  
Brecknell Electronic and Digital  
Preston experience  
Brecknell FM1600 FORTRAN simulation  
racing and signals  
Middlesex Data General Business Basic

Software Authors  
Analyst  
Systems Engineer  
Software Engineer  
Prog./Prog.-Anal.

## Overseas

Kuwait 2900 COBOL VME/8 IOMS  
Kuwait 2900 COBOL DME 63  
Kuwait 2900 COBOL VME/8 IOMS  
Kuwait IBM PC Banking  
Europe/UK VAX VMS/VSAM CICS TOTAL  
SHADOW ASSEMBLER  
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To meet these demands, they seek to recruit the following ambitious and capable DP personnel to whom they offer security, high salaries, expansion of skills, career development, challenge and excellent re-location packages:-

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Technical, Sales & Management Appointments

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Whilst experience of ADA/APSE would be welcomed we recognise the need to train. We would therefore wish to meet with candidates possessing at least eighteen months' software engineering experience using PASCAL, or indeed any similarly structured language.

If you feel you can contribute to this exciting realisation of the user-friendly and intelligent computer systems for the Fifth Generation, contact our Advising Consultants **Stephen Brown** and **Alan Carnell** on **01 935 0671** or telephone in the evenings from 7.00 till 10.00 on Hornchurch 72610 or Harpenden 2976. Alternatively, submit a full Curriculum Vitae in confidence to our London office, marking this reference GS2.

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This is the background to our need for more D.P. Professionals to join our team and play a vital role in our continued success.

Specifically we would like to meet:

MVS PL/I IMS, COBOL or PL/I RPGIII, S/38	Systems Programmers Senior Programmers All levels Senior Analyst/ Programmers Systems Programmer Programmers Programmers, Programmer/ Analysts Programmer/Analyst	London/Suffolk Suffolk Middx. London, Middx. Herts. Middx. Middx. Essex
PL/I, MVS, TSO Coral 66 VMEB, MVS	Programmer Team Leader, Programmer Software Engineer Programmers Programmers	London Essex, Bucks London Sussex London
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#### SAUDI ARABIA

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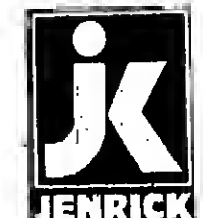
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For more details on the above and other scheduled assignments ring Bill NOW on 01-844-1722 or write enclosing detailed c.v.

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Consultants for our growing customer base.

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Please write, enclosing CV to:  
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## Cullinet

(7287)

## Real-Time Computer Systems Professionals £10,000 to £16,000+

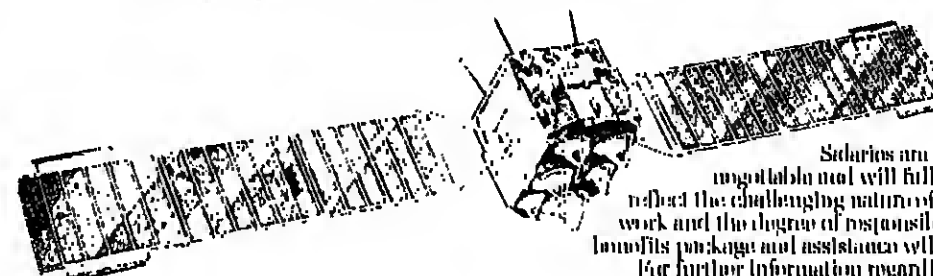
SCIENCE SYSTEMS is a well established systems engineering company with offices in London, Aberdeen and Bristol. Recent successes in both the AEROSPACE and PROCESS CONTROL fields have resulted in further expansion at both the Aberdeen and Bristol offices. Opportunities exist at various levels within the company for well qualified numerical engineers.

### Software Engineers

The Bristol office is primarily involved in the fields of space and communication systems. Both junior and more senior staff are required.

- Junior candidates should have:-
  - \* a minimum of eighteen months industrial experience
  - \* microcomputer e.g. DEC PDP 11, VAX or microcomputer e.g. ZILOG 80, INTEL 8086 experience
  - \* knowledge of high level programming languages e.g. FORTRAN 77, CORAL under MASCO and/or assembler
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Science Systems Limited  
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### Bristol Systems and Software Engineers Aberdeen

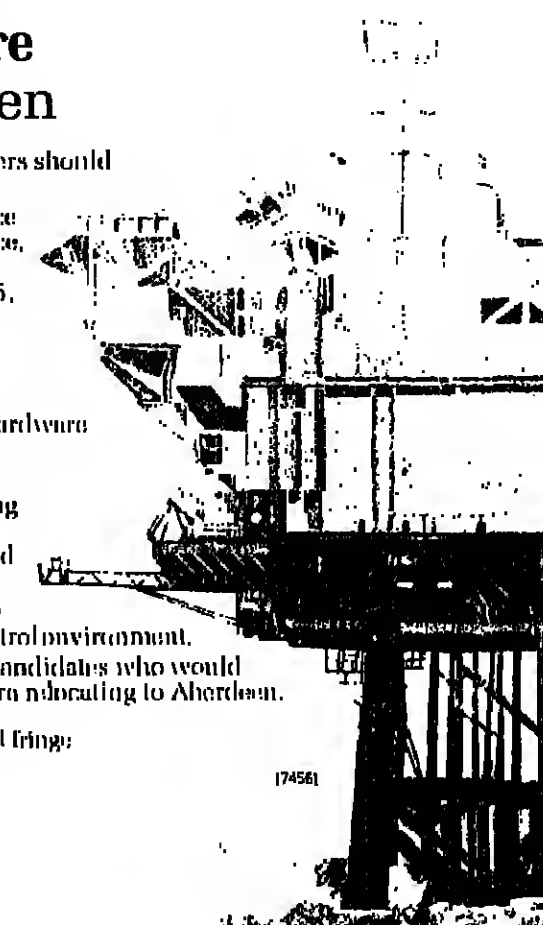
Candidates for the position of Software Engineers should have:-

- \* a minimum of two years industrial experience
- \* microcomputer and microprocessor experience, in particular one or more of the following: MOTOROLA 68000, ZILOG 80, INTEL 8085, INTEL 8086, ARGIS 700 and DEC PDP 11
- \* knowledge of high level programming languages e.g. PASCAL, CORAL and/or assembler

Systems Engineers, with either a software or hardware background, should have:-

- \* a minimum of five years experience in instrumentation and/or control systems using microcomputers and microprocessors
- \* for more senior positions, proven contract and project management skills

Candidates for both positions will ideally have a background in a petrochemical or process control environment. We would also be interested in hearing from candidates who would like to work in London for a short period before relocating to Aberdeen.



(7456)

The IBM SYSTEM 34/36/38 Recruitment Specialists

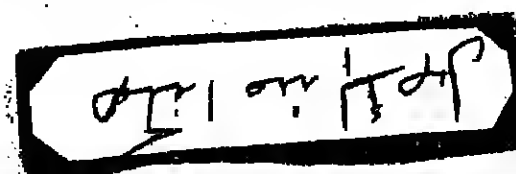


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**THE VACANCY:** Requires a professional who would like to work in a relaxed and informal atmosphere. The successful applicant will be encouraged to 'roll their sleeves up and get involved'. Every opportunity will be given to develop both responsibility and technical knowledge. RPG experience and self motivation are essential and the ability to communicate with users is important.

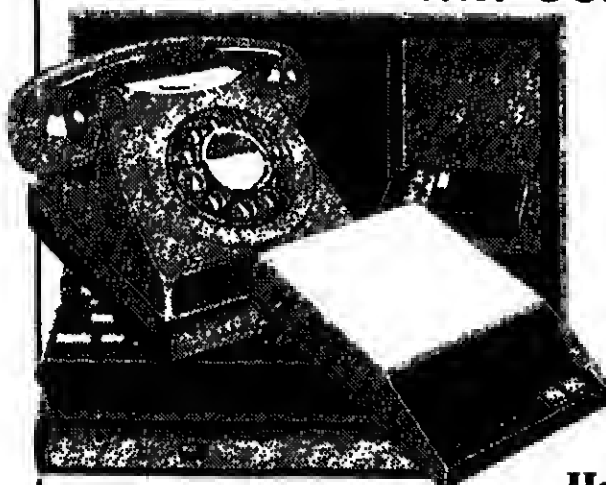
**THE CHALLENGE:** Will be in developing the sales force manager and solving the marketing division's long term software needs. In addition helping to complete the successful installation of Maapics with thought being given to the purchase of additional add-ons.



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Essentially office based, you'll have the technical knowledge sufficient to answer queries from both Dealers and End Users in one of four areas: CPN based micro hardware or CPN micro software at a small business systems level; data communications and modem products; data communications software. Additionally, you would be expected to help provide a technical training to Dealers and their sales staff.

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(7498)

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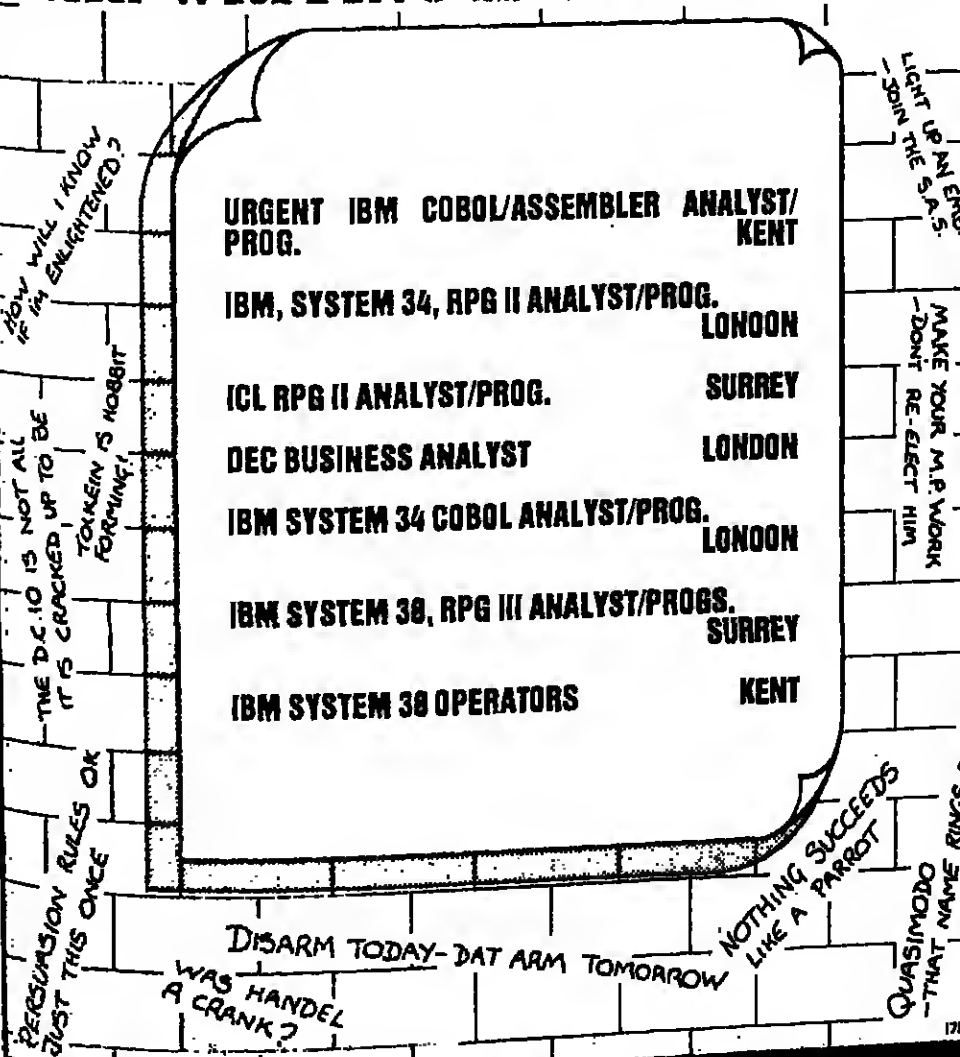
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### M.I.S. SYSTEMS ANALYST Central London £11,000-13,000

A major UK Finance House based near Covent Garden is developing several major new systems, one of the most significant being a new Management Information System based on a 4th generation software package. The feasibility study stage of this project has just been completed and an additional Systems Analyst is required to join the small team which is about to start the main project development.

The successful candidate will have had at least 2 years Systems Analysis experience, preferably with MIS in an IBM mainframe environment. The ability to communicate effectively with all levels of management is essential.

Salary is negotiable within the above range according to experience, and will be accompanied by a generous benefits package which includes Non-contributory pension, group BUPA scheme, subsidised restaurant and, after a qualifying period, season ticket loan and mortgage facilities.

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EMPAGY



## IBM Systems Programming in Rural Wiltshire

We are the fast expanding Systems Programming Group of a large well established IBM mainframe installation. Our IBM 3031 under OS/VS1 has recently been joined by an IBM 4331 (VM/370 and APL) in order to provide a personal computing service to our users, and a migration to MVS is planned for early 1985.

This developing environment has now created opportunities for a number of Systems Programming personnel, with experience levels from Programmer up to Manager, to join and contribute to the expansion.

For the Systems Programming Manager and Senior Systems Programmer posts, we would obviously like a sound background in IBM software and the ability to control and motivate the technical team. For other positions, we are willing to build upon a good IBM background and provide software training if necessary.

We are prepared to be flexible when considering all applications as the training available is both comprehensive and varied. Successful Candidates will be involved in implementing major software developments, evaluating and installing software packages, and solving day to day problems. Excellent prospects are available to those seeking a career in systems programming, and benefits include relocation assistance and modern working conditions.

If you would like to be considered, contact our Advising Consultant, **Ian Mason** on 021-236 3781 (24 hour answering service) or on 021-353 5721 (Evenings and Weekends).

**Systems Programming Manager**  
to £13,700  
**Senior Systems Programmer**  
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## Senior Programmer

**£10,000, plus bonus**  
**IBM 4331 COBOL VM**

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We are a well established and highly successful finance house, part of a major group. Our small data processing department currently supports an IBM 4331 mainframe under VM and using TSO, SPF, VSAM, DL/1 and SAS.

To strengthen our team, we are seeking an experienced COBOL Programmer, probably with two or more years exposure to VM and EXEC 2, to work on a variety of applications.

In addition to technical challenge and a high proportion of development work, we offer the prospect of early involvement in systems analysis within an informal and constructive working environment.

Benefits include four weeks annual leave, group pension scheme with life assurance and relocation assistance to Nottingham where appropriate.

If you can demonstrate proven ability in VM and seek a satisfying and absorbing future, telephone **Jim Mitchell** on 021-236 3781 (24 hour answering service) or on 021-427 2291 (Evenings and Weekends until 9.00 pm).

**Nottingham**

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## Systems Analysts RPG III Programmer/Analysts c £10,500 c £9,000

## Mid-Wales

Recently a great deal has been said about the scope and opportunities to be found in Wales, but at Laura Ashley we've been aware of that fact for a long time. Over 20 years to be precise. In the rural beauty of Mid-Wales we have developed the home furnishing and fashion products that have made us internationally famous, investing in every kind of resource that will enhance this success still further. DP is one of our prime commitments. We have established an IBM System/38 facility that is at the very forefront of development, serving a diverse range of applications. But because we're ambitious and forward thinking, we do not intend to stop there. We want to maximise our computer power and consequently are investigating many new areas of involvement. That's where your challenge starts.

### Systems Analysts (2 positions)

If you would like to be part of an exciting development programme covering Production, Retail and Financial systems in an online database environment, then we would like to hear from you.

System/38 experience is not essential. What is more important is an ability to develop systems from the initial feasibility stage through to full implementation with the minimum of supervision.

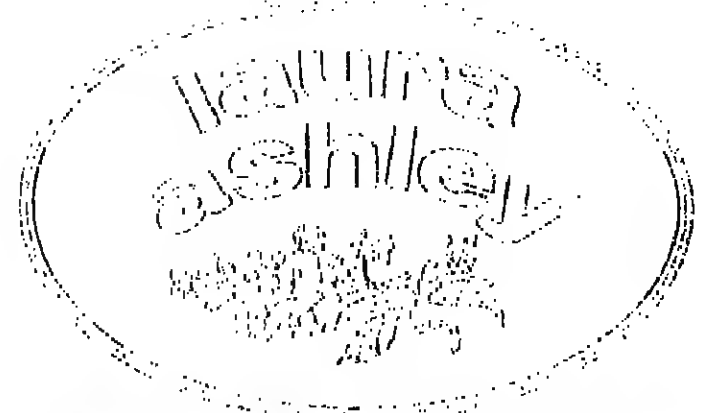
### RPG III Programmers/Analysts (2 positions)

If you are an RPG III programmer with at least 18 months application programming experience we would like to hear from you.

We are starting a large scale development programme covering production, retail and financial areas in an online database environment involving the setting up of an international network.

You should be able to involve yourself totally in a department that expects its development personnel to liaise directly with users with a minimum of supervision.

Benefits for all positions include a 4½ day, 38½ hour week, 4 weeks holiday, discount on company products and generous relocation assistance when appropriate.



Phone Richard Milsum, for an informal and confidential discussion of your requirements on: 01-354 1055, during office hours or on 01-958 2553 evenings and weekends. Alternatively please send full details to me at: March Computer Recruitment Ltd, 1 Noel Road, London N1 8HQ



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## Analyst Programmers and Programmers Consider the Benefits . . .

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★ IBM 4341 to IBM 3083 Upgrade in Mid-1984

★ Up to £13,500 + Substantial Company Benefits Package

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Our commitment to the use of data processing has never been stronger. We make full use of IBM and TANDEM equipment, but of particular interest is delivery in mid-1984 of an IBM 3083 to replace an IBM 4341, operating MVS.

We are now at the early stage of a five year IBM Systems Development Programme, incorporating online and database techniques. Our core system for business is currently being redeveloped, and once implemented, a substantial new systems development programme will get under way. Fundamental to the success of this programme is the need to recruit in two areas —

**Analyst Programmers with 3 or more years IBM COBOL experience;**  
**Programmers with 2 to 3 years IBM COBOL experience.**

For you to work effectively, we will provide full training in CICS and DL/1 (if you have these skills already, so much the better).

You will work in a project team environment which offers every opportunity for career progression to project management levels. Should you wish to further your career in more technical areas, then we have the scope for you to specialise.

Our location in Covent Garden makes for easy access from virtually all Main Line railway stations, and the Underground. Company benefits include Non Contributory Pension Scheme, Health Care Plan, Profit Sharing, Subsidised Staff Restaurant, Generous Holiday Allowance and, after a qualifying period, an Interest Free Season Ticket Loan and Subsidised Mortgage.

Now that you have had a chance to consider, why not find out how to reap the benefits by telephoning our Advising Consultant, **Stephen Brown**, on the SCR London office telephone number below or **04024 72610** evenings and weekends. Alternatively submit a detailed C.V. to him at the SCR London office.

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# HOWARD

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With minimum 3 years tech support exp. of IBM 3090, 3090X, 4330X mainframes. In depth exp. on any of the following MVS, MVS/SP, VAX, DOS/VSE, or systems and/or CICS, DL/I, TSO/SPF, IMS/DB, DC/IMS ADADIS, CICS/SPF. Software. Part-time contracts in W. Germany/Austria and Switzerland for German speakers. £700pw.

### UNIX Specialist (1)

To install and provide UNIX support on Hewlett of Software House, some travel from W. Germany base. Assignment to run in excess of 1 year, must be German speaker. £ Very good rate.

### Prog/Analysts (2)

Manufacturing company, East Midlands require experienced HP3000 MPE TPL contractors. Knowledge of IMAGE VIEW QUERY and GENSYS would be a distinct advantage. In £500pw, duration 3 to 6 months.

### Design Engineers (3)

With Degree and exp. of VAX VMS and FORTRAN C/C++ to function in Hi Technology company, based in Scotland. Applications include Engineering, 3D Systems, Electrical and Drawing Office. Graphics exp. is an advantage. £700pw, according to exp.

### Project Leader (1)

Strong character to lead small team of Prog/Analysts, previous supervisory exp. required, must be able to speak German. Insurance systems exp. is essential. W. Germany based, long contract for right person. £750pw.

### Database Designer (1) Database Administrator (1)

Start Feb 84, based Central Germany, prefer fluency in German, long assignments, IMS/DB/DC are essential requirements. £750pw.

### IBM Software Programmers (3)

6 month contract blocks for experienced MVS System Progs. based in Northern Germany, must be able to speak German. £700pw.

For more information on UK and Overseas contracts please telephone CLIVE CHATTIN on 01-952 8092 or write to him at: Howard Organisation Ltd, Russell House, 140 High Street, Edgware, Middlesex HA8 7BS.

manage p.v. skillful use of means; succeed in one's aims.

### SUPPORT ANALYSTS Central London

We have been assigned the task of finding a energetic and innovative professionals to join one of the fastest growing computer companies in the U.K. If you have experience in one or more of the following, then turn your thoughts to a bright new future: - \* Preend Post sales support \* Project management with mini computer manufacturer \* Transaction processing \* Database \* Financial systems \* Communications and networking. Ref 416

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Credit Suisse First Boston Limited, a major International Investment Bank based in the City, requires two experienced VAX System Programmers. The bank has two 11/780 computers with a large in-house terminal population and a steadily increasing volume of first response processing. One of the successful applicants will be responsible for the design and implementation of the VAX software environment, the other will assist.

Applicants must have at least one year's experience of VAX system programming design using Micro and some experience in a commercial computing group is desirable. A competitive salary will be offered to the successful applicants along with generous banking fringe benefits. In the first instance, please contact T.M.B. Kerrigan Esq., 22 Bishopsgate, London EC2, Telephone 01-283 4200.

**CSFB**

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£8,000-£15,000

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Ask for Marilyn Davidson or David Thompson

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## 1984 OPPORTUNITIES

WEST MIDDLESEX/BERKS BORDERS £12,000

### IBM SYSTEM 34/38 DEVELOPMENTS

An extensive program of RPGII and RPGIII projects are currently scheduled with our client a well-known commercial organisation. They seek to recruit programmers to perform both programming and analysis relating closely with the User area. Applicants should offer at least eighteen months programming in either language and RPGII candidates will be offered RPGIII training. Ref: A1

EAST BERKSHIRE £9,500-£11,000

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COBOL, CICS, DL1 projects are currently being developed by our client located in a very accessible part of Berkshire. They are seeking Systems Analysts with around two years' experience of Analysis ideally together with a programming background, and programmers with at least two years COBOL for whom CICS and DL1 training will be available, and project work will cover a wide range of commercial/financial systems. Ref: A2

CITY TO £10,000 + BENEFITS

### RPGII/III - BANKING

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NORTH KENT £7,000-£13,000

ICL COBOL ANALYST/PROGRAMMERS/PROGRAMMERS  
A leading Consumer Products Manufacturer is now embarking upon a range of new commercial developments in COBOL on ICL 2900 VME systems using on-line and database software. They now wish to recruit programmers with at least two years ICL COBOL to be fully involved in these challenging developments, where there will be appointments to work with Users. Ref: A4

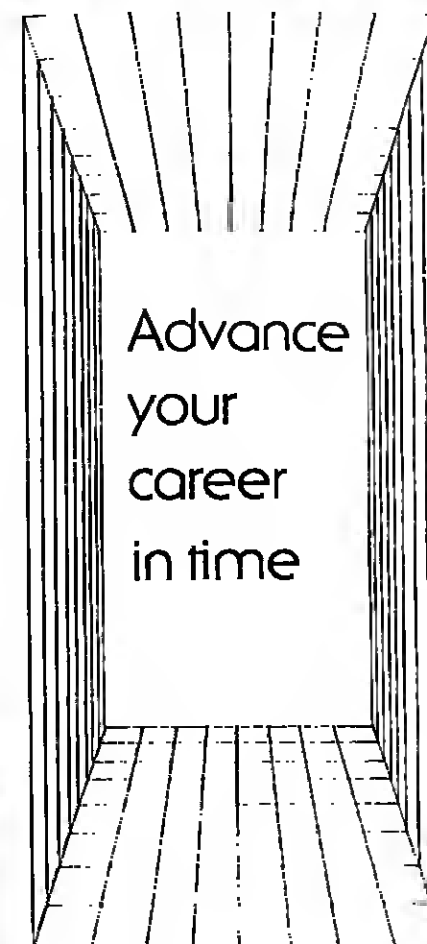
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# SYSTEMS & SOFTWARE ENGINEERS



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The past year has been an important one for Marconi Underwater Systems. On the technical front a host of Software and Hardware advances have confirmed our position as world leaders in underwater technology.

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Involving the detailed planning of trials necessary to support the weapon development programs and the subsequent analysis of weapon behaviour.

### Mathematical Modelling

Experienced engineers are required to derive mathematical models of complex weapon systems and their environment and to design and develop both digital and real time simulations of these systems.

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Comprising the design of the algorithms which determine the 'cleverness' of the software controlled weapons, using techniques such as pattern recognition and artificial intelligence.

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Or better still, telephone or write to Trevor Graves today



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OOS/VSE ASSEMBLER PROGRAMMERS  
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IBM COBOL/WANG VS100 CONVERSION ANALYST/PROGRAMMER  
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MVS COBOL IMS, ADF PROGRAMMER  
OOS/VSE PL1 ADABAS PROGRAMMER  
MVS SYSTEMS PROGRAMMER  
CMS ORDER PROCESSING ANALYST  
VM SYSTEMS PROGRAMMER  
OS/VS1 CICS RSCOE SYSTEMS PROGRAMMER  
SYSTEMS 38 RPG III ANALYST/PROGRAMMER  
SYSTEMS 38 RPG III PROGRAMMER  
JSP COBOL PROGRAMMERS (GAIN TANOEM EXPERIENCE)

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## ICL

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SYSTEM 25 SYSTEMS DESIGNER/TECHNICIAN  
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REDIFON EDITOR PROGRAMMER WITH VIEWDATA  
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For details of these and other on going requirements please contact Lorraine, Lynne, Wendy or Tony at KPG, or contact Lorraine on Walton-on-Thames 245552 (evening and weekends).

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HTV has two Honeywell minicomputers at its Cardiff administration centre. A Level 6 on which several financial applications are run and a DPS 6 which provides office automation facilities and transaction processing systems to administration users. A local area network is already installed and its use will be extended following the move to the new Television Centre at Culverhouse Cross. There is also a link to a Honeywell mainframe computer in London, which is primarily used for commercial air-time sales.

The use of the latest communications techniques and systems methods has led to an increase in the amount of specialist operations work within the Computer Department. As a result, a vacancy exists for a Computer Operations Supervisor, who will also have special responsibility for providing end user support. Applicants must have a minimum of two years experience preferably at a senior level and they must demonstrate that they are competent users of available system software. A knowledge of Honeywell Level 6/DPS 6 hardware and GCOS 6 Mod 400 system software would be an advantage though not essential.

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required in Centre for Computing and Computer Science to work on a two shift basis involved in the operation of a Honeywell Multics DPS 8/70, DEC 2000 and associated networking equipment. Applicants should have three years' large mainframe experience and educated to O level standard. Salary scale £5,800-£8,788 p.a. plus shift allowance.

Application form from Assistant Secretary, Personnel Office, University of Birmingham, P.O. Box 363, Birmingham B15 2TT. Ref. 660/2206. (7244)

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Requires a very good Analyst/Programmer in the role of Man to take charge of System/34 installation and to develop both banking and property management systems.

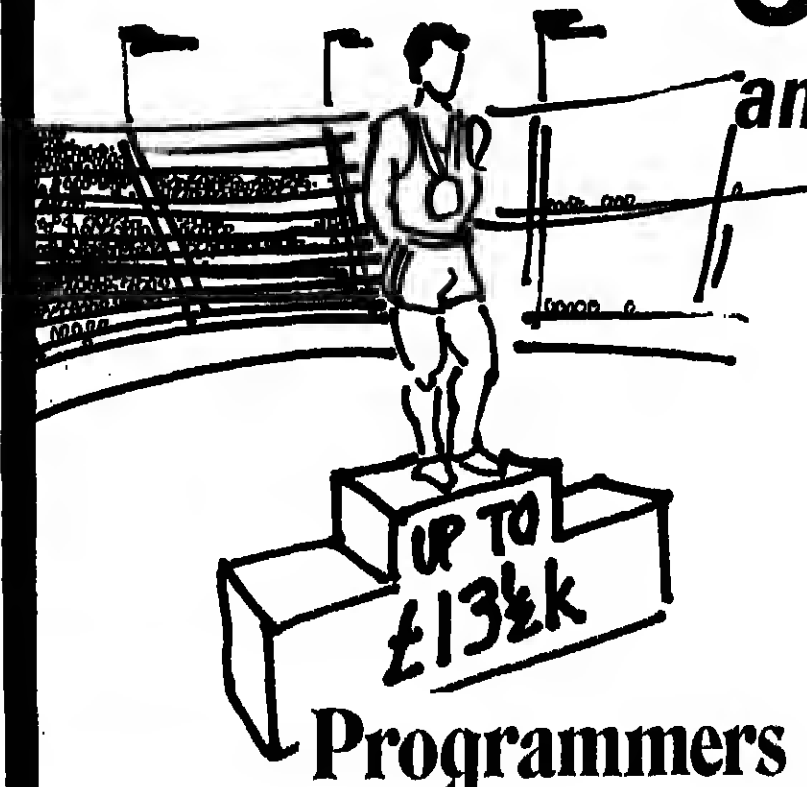
Preference will be given to individuals with at least three years' relevant System/34 experience and the ideal candidate should have experience of working in a banking environment.

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WORTH  
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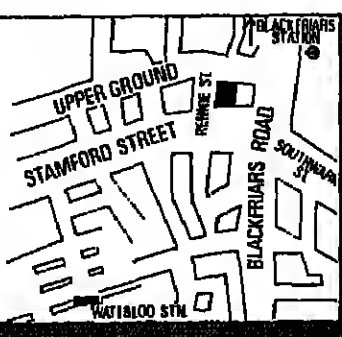
Call in to one of our open evenings, we will be pleased to meet you and discuss in greater detail the outstanding career opportunities we have to offer.

If you can't make it on any of the dates, please ring Lorraine Cathersides on 01-921 8047 for an application form or to arrange an informal discussion with our Systems Managers.

Alternatively, please forward a detailed c.v. to her at J. Sainsbury plc, Wakefield House, Stamford Street, London SE1.

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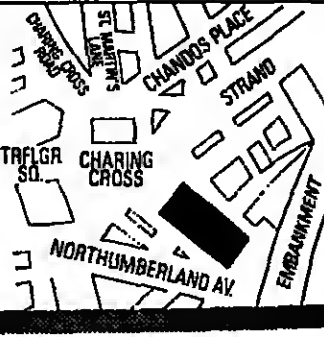
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We need three analyst/programmers to join our growing Banking team, developing systems for our International Banking clients in the City.

We have our own System 38 model 7, a bright modern office and a wealth of S/38 expertise.

If you have been working on the S/38 for at least 18 months, are friendly, confident and keen to develop your design and analytical skills - then you may be the kind of person we're looking for.

And if you want a competitive salary and the chance to work with a company which will recognise your ability, then you should certainly telephone or send career details with a summary of why you find this position attractive, to:

Sue Hayes, Banking Recruitment, Ref: CG1201

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We have for many years supplemented our own staff resources with freelance computer professionals and are currently planning our resources allocation for contracts starting early in 1984. All grades of staff are required to work both in the north and overseas.

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Ideally you will have a business studies qualification and general business background, including 2-3 years in a computer environment with relevant systems experience.

Starting salary range will be c£10,000, with progressive increments. Benefits include non-contributory pension and life assurance, free BUPA and relocation help to this attractive area.

Our system is based on a Honeywell DP54, using release 1.10 with IPS and our language is COBOL.

For further details please ring or write to: Alan Mundy, Flying Goose Limited, Barrow House, Bishops Cleeve, Warrington, Wiltshire BA12 9HU. Tel: (0905) 214566.

(7473)

## A CHALLENGE FOR THE FUTURE

### Analyst/ Programmer

The new Fife Ethylene Plant in Fife, Scotland, is scheduled for start up in 1985. The Plant is in an attractive location within easy reach of Edinburgh. Designed to convert North Sea Gas to ethylene efficiently, this plant represents an investment of over £400 million and it will rely heavily on up to date computer systems. As part of the planned build up of staff we are seeking a graduate with up to 3 years' computing experience to join our Information Systems Department. This is responsible for establishing a complete range of computing facilities to the plant from manufacturing information through plant maintenance to financial and electronic data systems. Initial role will be in the manufacturing information area with later opportunities to move to other parts of the company as the project progresses. Early responsibility will be given to work closely with users to meet their computing requirements. The Department uses primarily an IBM 4341 and a Data General MV8000 computer. The IBM system is based on a powerful relational database management language. Other systems are available through the company network. Candidates should be in their mid twenties. Training relative to previous experience will be provided. It would be an advantage for candidates to have a chemical engineering or computing science background, but opportunities are by no means restricted to individuals with this experience.

### Systems Programmer

We are also seeking a systems programmer to take responsibility for the operating system on the IBM 4341 and the relational database management system. Primary responsibilities will include the start up of this system and the provision of consultancy services to the company's plant at Fawley, Southampton, and two other sites in Europe. In addition the successful applicant will take some responsibilities for the Data General System and for commissioning and maintaining interfaces in a multi vendor environment. Candidates should be in their mid twenties, ideally graduates with experience in a systems programmer role of IBM's VM operating system in a database applications environment. However, consideration will be given to those candidates who have experience working with other operating systems.

Candidates can expect a competitive salary and benefits package which includes a relocation allowance where applicable.

Interested parties, male or female, should telephone 0592 262828 or write for an application form and job description to:

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SOFTWARE  
ENGINEERS

Europe  
Scandinavia

to £13,000  
+ Overseas  
Allowance

SPI International is one of Europe's leading systems and software houses. To be able to meet the requirements of its expanding overseas operations throughout 1984, the company needs software engineers and programmers with at least two years' real-time development experience using:

★ DEC VAX PDP-11 VMS REX-11  
★ PASCAL RTL's FORTRAN  
★ MOTOROLA INTEL ASSEMBLER

The successful applicants will be working on advanced software development projects in Holland, Italy, Sweden and other locations in Europe and Scandinavia.

JA8401

NCR

PROGRAMMERS  
ANALYST/  
PROGRAMMERS

Attractive

Building on a century of success NCR serves the information processing needs of a wide range of businesses throughout the world. At the hub of European in-house development activity is UK Information Systems and Services, responsible for the systems, telecommunications, office automation and computer processing within NCR. Several vacancies exist for Programmers and Analyst Programmers to join a number of development projects using sophisticated on-line development tools on a variety of hardware from mainframes to personal computers. Successful candidates will be working in an advanced systems, telecommunications and office automation environment, with career prospects to assume specialist roles within ISB or the NCR marketing and support organisations.

LOCATION: N.W. LONDON

JA8402

ITT COMMERCIAL  
CABLE COMPANY

SOFTWARE  
ENGINEERS

£10-18,000

Over a century ago the Commercial Cable Company opened the first transatlantic cable. Today, they form part of the ITT Communications Operations Group, a worldwide network providing a variety of telecommunications services. As the company continues to expand so will their teams of dedicated software engineers. Applications are now invited from computing professionals with any of the following experience to work on development projects.

★ PL/MOS, C, Assembler  
★ BASIC, VAX  
★ Message Switching, Real Time Operating Systems  
★ Communications Protocols, Device Handlers

In return we offer competitive salaries and excellent conditions of employment.

LOCATION: CITY

JA8403

SOFTWARE  
ANALYSTS

Excellent

Our client is a world leading manufacturer of 32-bit minicomputers. The support team plays a vital role in the increasing demand for the company's products. Vacancies exist for Software Analysts to expand the team responsible for UK and Northern Europe software support. Experience is required in two areas:

Scientific, Technical and Real Time - applicants should have four to five years' experience in a scientific, industrial or real time environment and be fully conversant with operating systems and communications software, scientific high level languages and/or assemblers.

UNIX and C - applicants should have in-depth experience of UNIX and C and will be involved in a challenging role of pre- and post-sales support of UNIX and its associated products.

We offer excellent salaries, company cars and a range of benefits normally associated with an organisation of our standing.

FK8404

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I am interested in Ref. ....

(7448)



# LANGTON

Langton Electronic Publishing Systems is an established but fast expanding systems house specialising in information management. As a stable and profitable organisation they cover areas such as text and graphics, demand printing, viewdata, on line retrieval systems, optical and video discs and computer assisted retrieval and delivery systems.

## EXCELLENT BENEFITS PACKAGE

- Company cars with Sur
- appointments
- Bonus Scheme
- Pension Scheme
- Interest Free season ticket loan
- Flexitime

**TRAINERS to £14,000 + OVERSEAS TRAVEL**  
As part of their expansion programme Langton require individuals with experience of training in publishing or software products preferably within an IBM or DEC environment. Reporting to the Training Manager you will be responsible for training customers in a variety of software products. The positions will require travel in Europe and potentially North America therefore foreign languages will be advantageous.

**TECHNICAL SUPPORT ANALYST to £14,000 + OVERSEAS TRAVEL**  
Duties include installation and support of electronic publishing software products as well as trouble shooting on customer sites. There will be some travel in Europe and potentially North America. It is envisaged that opportunities will be created for the right person to eventually move into systems programming. Eighteen months development or support experience in an IBM VM or DEC VAX environment is essential.

**TECHNICAL SUPPORT PROGRAMMER to £14,000**  
Responsibilities cover enhancing and maintaining software products including converting software to run on different computers and building a software tools environment for text and graphics processing. You should have two years experience in development or maintenance with a liking for thoroughness and the solving of complex problems. An understanding of IBM VM or DEC VAX Fortran is essential.

**CUSTOMER SUPPORT ANALYSTS to £12,000**  
These are key positions reporting to the Product Support Manager. Responsibilities include supporting customers using electronic publishing software, pre sales and post sales support, publishing software, pre sales and post sales support, and setting up and running of a hot line enquiry service, and setting up and running of demonstrations. Ideally you will have 2 years plus software development or support experience with a knowledge of either IBM or DEC. An understanding of the Xerox 8700 Laser printer or facsimile systems would be an advantage.

For an informal discussion regarding these opportunities please telephone Miles Richards on 01-938 1804 (24 hours) or 01-847 2385 (7pm-9pm).

**IPP Information Processing People**  
Specialist Recruitment Consultants  
20 Kenelington Church Street, London W8 4EP  
Telephone 01-938 1804 Telex 22861

## RPG III Join the High Flyers in Shropshire

We are a highly respected market leader in the consumer goods sector with a reputation for quality products that are enjoyed by a wide customer base. These products, together with innovative press and TV advertising, have elevated us to a very strong position within world markets and further growth is envisaged in 1984.

Within the next few months, we will be relocating our IBM System 38 facility from the City of London to Shropshire and we therefore now wish to recruit several experienced personnel with the knowledge and flair to make this move as smooth and efficient as possible and to contribute to our future success.



### Programmer c £9,500

Our first requirement is for a Programmer, probably with at least eighteen months experience on IBM GSD facilities and with an in-depth knowledge of RPG II or RPG III.

Initial involvement will be on order entry and distribution systems, but you can expect exposure both on development and maintenance in a variety of applications.

### Operators/Programmers c £8,500

We also wish to recruit two young Operators with some experience of IBM RPG programming who are keen to develop their skills in a progressive environment. After initial training in London, the successful Candidates will be given early exposure to a number of applications.

The excellent remuneration packages include four weeks annual leave, pension, life assurance cover and private medical insurance. Generous relocation expenses will be paid where necessary. These, combined with the very affordable housing and fine quality of life you can expect in Shropshire, make this an opportunity not to be missed.

To arrange a prompt and confidential interview, please contact our Advising Consultant, Jim Mitchell on 021-236 3781 (24 hour answering service) or on 021-427 2291 (Evenings and Weekends until 9.00 pm).

Technical, Sales & Management Appointments

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17401

## Shift Leader

£9,033-£9,999 plus shift allowance

## Computer Operator

£3,798-£8,154 plus shift allowance

### READING

The Reading Computer Centre contains 2 x ICL 2966s, one operating under CME (IG3/VME), the other under VME, and 3 Prime minicomputers. One 2166 will be upgraded to a dual 2988 in October for the new customer accounting system, involving a network of several hundred terminals.

Applicants for Shift Leader should have extensive operating experience in a large VME installation, including several years at a supervisory level.

Applicants for Computer Operator should have at least 18 months' operating experience in a VME installation.

Knowledge of Prime would be an advantage, but is not essential as full training will be given. A single shift system is currently in operation which will be extended to an early/late shift system later this year, for which an allowance will be paid.

You will be placed on the salary scale according to experience. Benefits include generous holidays, a staff canteen and good social facilities.

For more information and an application form, contact the Regional Manager, Computing and Information Services, Nugent House, Western Road, Reading RG1 8DB  
Telephone 0734-593403

## Thames Water

17401

## UNIX UNITE!

London or Berks £10-14K + Car  
The interest in UNIX is accelerating and represents YOUR CAREER GUARANTEE - perhaps for a decade. Various proliferators, and so the opportunities - technical and commercial applications, system building, pricing, support, development, etc. and there are dangers in specialising too early. Our clients are the recognised local point for all UNIX topics and thus offer two unique benefits:  
1. A wide range of activities in which to build your future career.  
2. Stimulus, recognition, feedback from other UNIX enthusiasts and users.

Our knowledge of the UNIX market place is comprehensive. See Allen Sanders leader, to discuss your career objectives. Tel. CA335. (17401)

**db executive (kingston) ltd**  
63 Eden Street, Kingston-Upon-Thames, Surrey, Tel: 01-549 6441 (24 hrs)

## SENIOR PROGRAMMER c £11,000

We are a small, fast growing Business Systems Company providing, at present, predominantly consultancy services to a wide range of mainly international customers. The company is experiencing increasing pressure to provide bespoke software and to develop its own package software for clearly identified markets. Extensive use is made of a range of Nixdorf hardware and software. Applicants should possess sound programming skills, preferably in BASIC and COBOL. Other languages will be considered. Systems experience in a business environment is preferable and the work is likely to require good communications skills. The company can, in return, offer you:  
\* A stimulating and pleasant working environment  
\* A range of bespoke and package software projects  
\* The opportunity for career development which only an exciting, fast growing company can offer.

Please write to:  
Peter Davidson, Managing Director, PACT, 17 Lyons Crescent, CHICHESTER, Kent TN9 1EX. Telephone: 0122 365011

**PACT** 17401

## ANALYST/PROGRAMMER MINI/MICRO COMPUTERS

£8K-£12½K WEST COUNTRY  
Application development and support for systems supplied to the Typesetting/Printing industry. We employ a small group of talented software people and now need to expand this team to cope with a growing order book. Experience of mini or micro assembler software is a must with a minimum of three years' experience in computing.

We are currently committed to work in the following areas:

- ★ Text processing
- ★ Typesetting
- ★ Graphics
- ★ Mathematical formulae

Interest has now established itself as a market leader within the Printing industry - you could play a major part in our continuing success.

If you have the talent and self-reliance we can offer a lively, stimulating environment with plenty of scope for a variety of roles.

Please contact Wyn Thomas on 0761 232606 or write to him with full c.v. to Interest Computer Systems (UK) Limited, New Rock, Chicompton, Bath BA3 4JE. 174301

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## WORLDWIDE COMMUNICATIONS SYSTEMS

# Project Managers

£16,500-£18,500 + car

## LONDON BASED

Our client, with development headquarters in London, was established more than a decade ago and is currently a market leader in the Financial, Banking and Trading areas.

The Company are looking for Project Managers for their Communications Development Group to enhance their existing highly successful operations and, at the same time, establish a new generation of software to service its worldwide client base through its Operating Companies in the USA, Far East, Middle East and Europe.

The successful applicants may be drawn from a wide range of backgrounds, but must have realtime or online development experience in a communications environment, be highly motivated individuals and able to work on their own initiative. They should also be willing to travel, both in the UK and overseas.

Systems are presently based on DEC PDP11 and VAX hardware but future strategy is to make the software portable and therefore implementable on other CPUs.

Products include a range of International Banking Systems with a sophisticated interface package linking into the S.W.I.F.T. and other International Networks - they also have a store-and-forward message switching system which manages communications over Telex, Telegraph, PSS and Private Line Networks.

This is an ideal opportunity to influence the direction of future products, to grow with an expanding international organisation, and to be responsible for the design and implementation of their next generation of communications developments.

For further information, please contact Jenny Dalrymple-Hay or Ian Murray West on 01-493 2947, from 8am to 10pm Monday to Friday, or weekends Jenny Dalrymple-Hay on Beaconsfield (04946) 4579, quoting REF 5040.

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## Computer Systems Planning Manager

National retail company, Manchester. To design and implement systems to control all operational aspects. Salary c.£12,000 + car + benefits. Educated to graduate level. Age: 28 to 45.

Phone for application form.

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## Cobol Programmer £8,000+ p.a.

We are an expanding company using an ICL ME29 computer with numerous ICL DRS mini-computers and require a person with 2-3 years' experience.

The position involves user liaison, the writing of new systems and maintaining of current systems.

Benefits include 22 days holiday and pension scheme.

Please telephone Roger Strong, Computer Manager, on 01-540 1151.

174521

**PCL**

A MEMBER OF THE SGB GROUP



**TECHNICAL SUPPORT ROLE • To £9,500 + Car + Bonus • West of London**

Recognising certain characteristics is something our client, OCR Scandalo knows all about. They are market leaders in the development and supply of sophisticated Optical Recognition Equipment which has placed them at the forefront of the UK, European and US markets. Their diverse products range from Hand Held OCR readers to 'State of the Art' full document image capture equipment. The applications utilising these products are equally wide ranging.

The Company is constantly improving the performance of its products and it is within the Software area that you will play an important role in a technical support capacity. This is a responsible and varied position within a team involved in both the development of customised software and also the demonstration and implementation of the company's products. The technical environment includes DEC, IBM and Perkin-Elmer hardware and a diverse range of mini/micro systems supporting the products.

You'll be working with a variety of high and low level languages, with the latest developments taking place in 'C' and MS-DOS.

Ideally you should have experience of around 2 years programming in a mini/micro environment. Applications from candidates with the ambition to move into this field are also invited. If you have the technical ability and the confidence to communicate effectively, this is a company that will maximise your talents and stimulate you both personally and professionally.

And should you need further convincing; the rewards include a salary of up to £9.5K + car + bonus, private health scheme, pension scheme and life assurance.

If you can identify with such technical scope and career prospects call Hugh Macer up to 7pm Weekdays on 01-734 9723. Evenings and weekends 01-881 2788.

# Programmer/Analysts • An exercise in character recognition



## CTR

Computer Technology Recruitment Limited Triumph House, 189 Regent Street, London W1R 7WD.

## Analyst/Programmer

c.£10,500

Our client is a manufacturing company within the light engineering industry, part of an international group which is itself a public company. Their very well-established DP department (small, friendly and closely-knit) already has a good reputation within the company, having successfully implemented both major and minor projects, which include the accounting functions and order-processing. They are currently undertaking Production Control/Inventory Management, which will be both on-line and Database. The environment is:

- NCR 8555 • VRX COBOL
- TRANPRO • TOTAL

For this position we are looking for 2-3 years' experience gained in a similar VRX COBOL environment. You will be responsible for your own project, or part of a project, from start to finish, including specification writing and user liaison. Implementation skills are particularly important.

**Richmond-upon-Thames**

Please contact Joan Ainsworth on 01-681 8311 or write to her at Computer Search and Selection Ltd, Carolyn House, Dingwall Road, Croydon CR0 9XF.

Computer Search  
& Selection

## COBOL Programmers

**Croydon to £10,000**

Our client is an established Management Services department, in the process of developing new systems.

If you have at least one year's practical COBOL experience, preferably gained in a VME, DME or VMS environment, these positions offer you the opportunity of initial training in appropriate areas and other training as your career develops.

**ICL 2900 DEC/VAX Micros**

Please contact Joan Ainsworth on 01-681 8311 or write to her at Computer Search & Selection, Carolyn House, Dingwall Road, Croydon, Surrey CR0 9XF.

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## Senior Analysts & Programmers

**Manchester to £12,000 + Relocation**

Our client is a well-established profitable company, a leader in its field, heavily committed to computer systems in a growth environment. The installation is based on an IBM 3083. An assembler background is required and experience of TOTAL would be a distinct advantage.

Contact Tony Roberts.

## IBM Programmer & IDMS Technical Analyst

**Cambis/Lines Border £8,000 - £12,000**

Our client, a subsidiary of a major company, has a sophisticated TP network based on an IBM 4341. Opportunities exist for an experienced IBM COBOL Programmer to develop and maintain on-line commercial systems. We are also seeking a Technical Analyst with good IDMS experience.

Contact Barry Turton.

## Systems Manager

**South Yorkshire Attractive Salary (Neg.)**

This particularly demanding position will interest a high achiever with sound DLI/CICS experience. Responsible for a small team of analyst/programmers, the successful candidate will provide a comprehensive range of integrated business systems. Career prospects in this major group are excellent.

Contact Barry Turton.

## BASIC +2 Programmer

**Rural Cheshire c.£8,000**

This is an excellent opportunity for a programmer with around two years' experience to join a major high technology manufacturing company about to introduce DEC VAX hardware using BASIC +2 to develop and maintain manufacturing and commercial systems. Knowledge of COBOL would be an additional advantage.

Contact Barry Turton.

## OVERSEAS

**Real Time Specialists Manchester/Europe to £18K**

Our client, a major software group seeks a number of real time specialists with skills particularly in the industrial/technical systems area. Of particular interest are skills in PASCAL, DEC/VAX, ASSEMBLER.

**NCR Systems Specialists Brussels to £16K**

A technical support group of a multinational organisation is looking for about six specialists with good NCR systems skills - VRX IRL IMOS - for permanent positions in Belgium. Candidates must be either operations or software based.

**RTL/CORAL/PASCAL Benelux to £20K**

An international scientific group is now strengthening teams in the industrial, communications and defence systems area. Candidates should have at least 18 months experience in one or other of the above languages.

**ICL TP Specialist Luxembourg to £16K**

A continental computer manufacturer is looking for an additional TP specialist to join its team supporting an ICL 2900 VME machine. Candidates must have sound experience of ICL TP systems including knowledge of CSC and MPS.

Contact Brian Harris

## REAL TIME

**CORAL 66 Programmers Cotswolds to £15K**

An avianics group based in an attractive West Country area seeks a number of CORAL 66 software engineers for a large development project using DEC/VAX systems. Candidates should preferably have at least one years experience.

**Microsystems Specialists Lancashire to £11K**

An engineering group with a high profile in industrial automation technology seeks a number of software engineers with experience of scientific/industrial software development. Candidates should have at least one years experience of ASSEMBLER, PL/M or PASCAL.

**CAD/Graphics Specialists Cambridge to £14K**

Our client, a British software organisation is now seeking additional development staff for its Cambridge Headquarters. Candidates should be able to offer knowledge of FORTRAN based graphics systems based on VAX or PRIME computers.

**Project Leaders Staffordshire to £16K**

Our client, a special group developing civil command and control systems is anxious to recruit a number of senior software specialists with significant skills in real time technical systems using DEC VAX PERKIN or any other computer.

Contact Brian Harris

## NORTH

**IBM COBOL Programmers Humberside & North East to £9,500**

Clients in the North East and Humberside wish to recruit experienced IBM COBOL programmers in DOS/VSE installations. Relocation packages may be available.

**Analyst and Programmers West Yorkshire to £13,000**

We have a number of vacancies to suit candidates from a variety of backgrounds. Of particular interest would be programmers with IBM/ICL, COBOL, and analysts with manufacturing or distribution or financial experience.

Contact Barry Turton

**Management Consultants UK—City locations to £18K**

Candidates should be aged 27-36 with a minimum of four years varied commercial DP experience with management exposure. A degree or professional accounting qualification is mandatory. Some mobility is required.

Contact Tony Roberts

For further details please contact the appropriate consultants, on 0270 627206 daytime or evenings and weekends as follows: Tony Roberts 0270 624068; Barry Turton 09563 4744; Brian Harris 0270 628454; Olga Penn 0270 624138; Alison Jary 0270 628496.

## MIDLANDS

**IBMS 38 East Midlands to £8.5K +**

Well established manufacturing company has a vacancy for an analyst programmer with RPG/II or III skills. Experience of MAAPICS would be an added advantage. Relocation paid.

**ICL COBOL Leicestershire to £8.5K**

Our client seeks a young analyst programmer with a good COBOL background who is seeking to gain further experience in a manufacturing environment. Knowledge of OMAC preferred.

**IBM COBOL, PLI East and West Midlands to £10K**

Our client is currently seeking IBM programmers with Cobol and/or PLI skills. Experience of CICS preferred. Good salaries with relocation package.

**Burroughs COBOL South Yorkshire to £10K +**

A large successful company is seeking additional COBOL programmers with at least 18 months' experience on large Burroughs mainframes. Excellent career prospects.

Contact Olga Penn

## SOUTH & WEST

**CICS and Database Middlesex to £13.5K**

Following expansion our client is looking for several analyst programmers. Two positions require one year CICS plus 2 years' general DP in an IBM installation using COBOL or Assembler. Others require a minimum of 1 year's database, preferably IDMS and 2 years' general DP, again ideally in an IBM environment with COBOL and MVS. ICL IDMS would be considered.

**Analyst/Programmers Wiltshire to £10K+**

New developments have created vacancies to work on financial and insurance systems within this IBM environment. COBOL is essential and exposure to IBM and financial systems would be advantageous. Up to 5 years' relevant experience desirable. Good benefits.

**Honeywell L64 Wiltshire to £8.5K**

Our client requires a programmer with a minimum of 3 years' experience of Honeywell L64 and COBOL to work in a commercial environment. Exposure to L6 or ICL DRS would be advantageous.

**IBM Analyst Programmers Hampshire to £10K**

Openings exist for analyst programmers at various levels with this well-known company. Knowledge of COBOL is essential. Good prospects.

**IBM COBOL Berkshire to £10K**

Several vacancies exist for programmers at varying levels to work on commercial systems. A minimum of 2 years' IBM COBOL is necessary. Knowledge of CICS would be an advantage.

Contact Alison Jary



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As a major international systems consultancy, Cord can offer you everything that reflects professional excellence. Our specialisation is in the high technology areas of computing means that our expertise is in demand for short term consultancy up to million pound projects. We are dynamic, profitable and developing fast. What's more, we understand exactly what makes someone like you tick.

Consider a diverse range of applications embracing communications, real time, and defence, each of which will fully stretch your capabilities. You'll work at the forefront of technical software design, using the finest available facilities and making a tangible contribution at every stage from concept through to completion. What's more, you'll be working towards implementation every time.

No one could extend your experience so quickly, and nowhere will you find better prospects. You'll be continually challenged by our flexibility, working both inhouse and at client locations, with well defined responsibilities.

Matching our pace means being bright, presentable and outgoing. Aged 25-35 you're probably a graduate, although our emphasis is primarily on experience, which must have been gained over at least 3 years in a relevant scientific or technical background, where you will have become familiar with technical and real time languages such as Assembler, Corel or Pascal. All this will bring you career development fast, with early management responsibility.

Salary wise, we're talking up to £15,000 depending on your ability. And there are many other benefits such as first class training, free personal PPP insurance, a pension scheme, expenses and relocation assistance if necessary.

So phone Derek Pearson on Staines (0784) 83911 during business hours or on Bromley (0880) 50700 evenings and weekends.

Alternatively, if you prefer, write to him at Cord Designs Limited, Cord House, The Causeway, Staines, Middlesex TW16 3AX.

## Permanent Job Opportunities

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Salaries £8K to £17K p.a.

The Permanent Recruitment Division of S-COM has vacancies in LONDON, HOME COUNTIES, SOUTH and WEST for Software and Hardware Engineers with at least one year's Real Time experience in one or more of the following:-

- Communications Voice and Data
- Process Control
- Graphics Defence
- Local and Wide Area Networks
- Mathematical/Scientific Programming

These vacancies are all with client companies involved in State-of-the-Art Engineering and offer exciting opportunities for advancement. Experience of DEC systems and/or INTEL or MOTOROLA micros would be an advantage. Salaries range from £8K to £17K with relocation expenses where appropriate.

### Telephone Today

Ask for John Ford quoting reference CW/26/01 to learn more about these opportunities or write enclosing cv to:



Computer Systems Engineers Limited

Tower House, High Street, Aylesbury, Bucks. Tel: 0296 32023  
Evenings after 7pm or weekends: 01-450 9444

176071

## Systems Analyst

Business Technology

Circa £10,000  
+ Relocation



Cheshire

The Candidate

Identify will be a graduate with at least two years systems analysis experience. It would be particularly beneficial for candidates to have had specific experience of one or more of the areas outlined above. Good communication skills and the ability to operate independently or as part of a project team are essential personal characteristics.

The Client

Is a highly successful and profitable company operating in the forefront of technology. Located in an attractive part of Cheshire, it is well served with motorway, road and rail links.

The Position

Is within a small Business Technology section working in the field of office systems encompassing such areas as information storage and retrieval, text processing, personal computing and the associated equipment and software.

For further details please ring Tony Roberts on 0270 627288 during the day or 0270 624088 evenings and weekends. Or write to him at the address below.



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## SPL International

### ADVANCED INFORMATION TECHNOLOGY AND KNOWLEDGE ENGINEERING OPPORTUNITIES TO JOIN ONE OF THE UK'S LEADING GROUPS. SALARIES TO £18K.

SPL International's Research Centre is the Company's corporate focus for advanced Information technology. The Centre's work involves the design, development and marketing of software tools and technology for use within the Company and for its clients in the UK, Europe and the rest of the world. During 1984 the Centre will be making investments in new Knowledge Engineering tools and advanced knowledge-based application.

In support of this programme applications are sought from individuals who have experience of and can demonstrate achievement in one or more of:

#### KNOWLEDGE ENGINEERING

Consultancy, design or implementation skills in K.E. including the development of at least one significant application preferably in sensor data processing or with a large MMI component. For senior positions a broad group of KBS techniques is essential.

#### SOFTWARE TECHNOLOGY

Design and implementation of advanced interactive software environments including object oriented, applicative, list processing and logic programming languages, relational database and expert system shells.

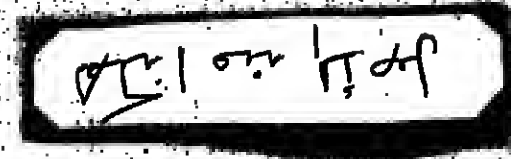
#### EMBEDDED SYSTEMS

Consultancy or project management skills in embedded applications including plant monitoring and control, EM and acoustic sensor data processing, tactical simulation and military or related command and control systems.

The Research Centre is located in an attractive part of the UK at Abingdon, near Oxford. It maintains strong links with other SPL Divisions, both in the UK and continental Europe. Extensive computing facilities are installed including a powerful VAX configuration, PDP service machines and a wide variety of micros. Software environments include POPLOG, PROLOG, LISP, ADA, SAGE, ALGOL68, PASCAL and RTL/2.

To applicants with the right experience, motivation and innovative skills these opportunities offer:

- ★ Competitive salary with relocation as appropriate
- ★ Excellent career prospects in a growing organisation
- ★ Scope for innovation at the front of current thinking
- ★ Visibility and recognition of individual effort in small teams.



Write with c.v. or call: Cheryl Carter, SPL International Research Centre, The Charter, Abingdon, Oxon. (Tel: 0235 24112).

(2759)

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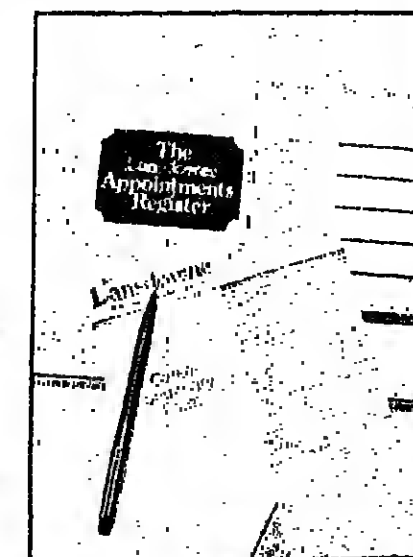
We've spent 12 years introducing employers to job-seekers. At the same time training and shaping the information we ask for into the best fighting form employers welcome and use.

Our computer instantly removes your form and compares it with the vast number of vacancies we've been asked to help fill in 263 different job categories. And we scan the Register every day to see which of the latest incoming vacancies might suit you.

We need to do this because the Lansdowne team is talking to employers about job vacancies day in, day out by phone, mail and face to face. So new vacancies are constantly being added to Lansdowne Appointments Register.

We could have one in there for you right now. And it costs you nothing to find out.

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**01-743 6321 (24 hours)**



### Lansdowne

Appointments Register

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Please send me a Lansdowne  
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(2759)

## NETWORKING SPECIALIST

West London based c£12,000

The expanding Telecommunications division of a major international British Group, with a turnover in excess of £4 billion, provides information systems support to a wide variety of users throughout the UK. To ensure that the three major networks (voice, statistical multiplexors and SNA) continue to provide the excellent communications required by the group, they now need to recruit a networking/communications specialist.

Your responsibilities will cover the installation of all new equipment and liaison with end-suppliers. In addition you will work with the technical support team to identify user-orientated problem areas, which will obviously involve some travel - for which a car will be provided where necessary.

To move into this fast-moving environment - where change is the norm rather than the exception - you should be a self-motivated network specialist with a background in diagnostics. The team is young and sociable, the work is hard - the rewards are excellent.

Ring Jsyne Longmore on 01-948 5922, Now for an immediate interview or write to her at KPG.  
Please quote Ref: JKL/530



KPG Computer Support Services Limited  
Cobden House, Park Lane,  
Richmond, Surrey, TW9 2RA



EMPAGY



# Communications Development

**Project Leaders  
Software Engineers**

**Berkshire  
£8k-15k**

## Communications Designer

BERKSHIRE

Up to £14,000

A major manufacturer of minicomputers is seeking Programmer/Designers to develop communications systems. The project involves support, design and development of X25 Level 2 software and LAN Link level software for Unix System III-based workstation.

Candidates should have practical experience of X25/HDLC or similar protocols. Additional experience of Pascal, C, Unix is highly desirable.

Successful candidates will gain valuable experience in the implementation of the lower four layers of the OSI model including Network definition and control. CW 2/4

## Florida

NETWORKS/X25

Up to \$50k

One of the world's most innovative producers of communications and information systems is currently seeking to recruit additional Comms experts to work at their laboratories in Florida.

The company is looking for experts with two main areas of expertise: Data communications specialists, requiring highly qualified candidates with experience of X25 and related protocols, package switching and network diagnostic equipment experience.

The second area calls for Network software specialists; at least two years' experience of VTAM, BTAM and NCP. Additional experience of a COMTEN or IBM 3705 hardware is desirable.

In addition to the technical skills to be gained, the company provides a comprehensive benefits and relocation package. CW 2/10

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RECRUITMENT SERVICES

01-399 9183

Datamatics, Freepost, Surbiton, Surrey KT6 5BR

## Communications Manager

BERKSHIRE

Up to £18,000 + bonus + car

The Computer and Communications Manufacturers Business Section of a major systems house have created a new Account manager's position to assist in the development and management of this important business area.

This position calls for the combined ability of (A) selling/marketing the company's services and (b) a solid systems development background with more recent experience of communications systems, e.g. IBM Comms, ICL Comms, X25 and LANs. Finally, candidates should possess project management experience preferably with some financial and contractual responsibilities.

This position offers the successful candidate the platform to assume further business responsibility in the future. CW 2/3

## Coral/Mascot

LONDON/SURREY

Up to £15,000

A leading consultancy commanding large contracts with the MOD require professional Programmers and Software Designers to work on Realtime systems. Candidates should have a degree plus experience of Coral and preferably Mascot. Experience of Context and VAX machines would be helpful.

Successful candidates may look forward to enhancing their careers within an organisation proud of its reputation for professionalism and career development. CW 2/5

## C<sup>3</sup> Development

LONDON/HOME COUNTIES

£16K + Package

One of Britain's leading information systems contractors is seeking consultants for research and development on major C<sup>3</sup> projects.

Candidates should have a numerate science degree and have at least five years' experience in Defence Communications, working on large projects like Pirmigen, BATES, etc. Candidates should have a thorough understanding of communications systems, analysis and design. CW 2/6

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RECRUITMENT SERVICES

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## Automation Systems

CENTRAL LONDON

£8-18k

The Industrial Group of a leading software company seek Junior Programmers up to Senior Consultants to assist in the immediate development of a number of new major contracts recently acquired.

Candidates suitable for the medium to senior levels should have significant experience in software design and/or project leading, particularly on projects using DEC and HP1000 machines. A minimum of four years' experience is sought in one of the following three areas: (1) Plant Control (warehousing, materials handling, process control), (2) Distributed Control (wide area networks, automated retailing systems), and (3) Software Technology (X25, ISO standards, Unix).

Programmers should have a degree plus a minimum of six months' experience. Project work will be as outlined above and candidates will ideally have worked on minicomputers, e.g. DEC, HP1000 and Gould SEL, using Pascal, Fortran and COBOL. CW 2/7

## Switzerland

TELECOMMUNICATIONS

ENGLISH SPEAKING

An international telecommunications company in Switzerland is currently seeking Software Designers to develop TELETEXT applications based on Intel 8086s.

Candidates should have a Computer Science or similar degree plus two to three years' experience of microprocessors (ideally Intel), Assembler, and a high-level language (ideally C). Experience in Realtime communications, ideally X25, is desirable.

Successful candidates may look forward to enhancing their career prospects, gaining valuable experience in an international environment. CW 2/9

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## Scientific Engineers

DORSET

Up to £11,000

One of the country's leading software houses have recently opened an office in Dorset in order to service their local client base in the South-West of England.

In line with this expansion, our client currently needs a number of Engineers, from graduates up to experienced professionals, to assist them in their development projects. Candidates should have a relevant degree together with one or more of the following skills: Fortran or ICL/IBM Scientific Applications, Z80, Unix, Operating Systems, Pascal, Coral, Mascot, Context, VAX/VMS, Fortran and General Software/Scientific Applications experience.

Successful candidates will work in-house or within easy travelling distance of the office. CW 2/1

## Hardware/Software Engineers

BERKSHIRE

Up to £12,000

The Industrial Systems Group of a major systems company have an urgent requirement for a number of experienced Programmers and Engineers to work on the design and implementation of a wide variety of Realtime systems. Applications include flight simulation, radar, missile guidance, ATC communications and networks.

Candidates should have a minimum of one year's experience in hardware/software applications. Languages should include at least one of the following: Assembler, Coral, Pascal, PLM, Fortran, C and Ada.

Successful candidates will enjoy demanding work involving finding hardware/software solutions to a variety of applications. CW 2/2

## European Careers

HOLLAND

£12.18K

The technical division of a leading software consultancy is currently seeking additional Software Engineers to strengthen a number of project teams involving a variety of communications systems including software, air traffic control, networks, defence, petrochemical, and process control. DCS, REX, Unix and Assembler.

In addition to the above technical experience, successful candidates must demonstrate a willingness to take project management and client liaison responsibilities.

This is an excellent opportunity to develop your career towards consultancy, combining high technology, European marketplace, team leadership and project management. CW 2/8

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174021



# CROSSWORD

Solution to Prize Crossword No. 48



This month's first prize of £10 goes to Terence O'Gorman, senior programmer at the Allied Irish Investment Bank in Dublin. Second prizes of £5 each are on their way to Marion Cowen, systems analyst at the Cleethorpes, Grimsby and Souththorpe Computer Committee; and John A. Kaye, analyst programmer at DRG North London Computer Services.

**MAJOR U.S. FLOPPY DISK DRIVE MANUFACTURER**  
**IS SEEKING**  
**EUROPEAN TECHNICAL SUPPORT ENGINEER**

To work out of Brussels, Belgium, office. Candidate will have electrical, mechanical engineering, or computer science degree with minimum 5-10 years' engineering level customer technical support experience. Emphasis on problem analysis, end-user and OEM customers. Primary function will be to provide pre-sales and after-sales technical product support, diagnose field problems and work with factory in California to solve.

Position requires travel intra-Europe and to the U.S. Fluent English a must. German and French language an asset.

Please send your C.V. to the attention of Mr. J. Zekin, Consultech International, Boulevard de Waterloo, 53/BTE 2, B-1000 Brussels, Belgium. (7481)

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Take advantage of a major expansion in their European development group, to further your career with world leaders in CAD/CAM.

They offer opportunities to use state-of-the-art h/w and s/w for varied applications - with excellent prospects of travel ABROAD.

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**COBOL PROGRAMMER**  
Min. 2 years NCR IMOS/IRX experience. A working knowledge of CP/M also useful. Salary negotiable.

Please send full a.v. to Personnel Officer, BREAKMATE, 26 Concord Rd., London W3 0TH. (7389)

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c/o Computer Weekly  
Quadrant House, The Quadrant  
Barton, Surrey GU24 0AS

**MAAPICS SYSTEM 34/38**

Small development team needs a Senior Analyst/Prog/Project leader.

c. £13,600

**KPG** RING DAVID MASON-JOHNS  
on 01-948 5922  
or 01-891 0906 eves/weekends  
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**UNIVERSITY OF SURREY**  
**ANALYST/PROGRAMMER - DATA PROCESSING**

The Data Processing Section of the Computing Unit has a vacancy for an Analyst/Programmer to develop systems for the University's Administration and Library. The successful applicant will develop systems on a variety of computer equipment, programming in Cobol.

Applicants should have proven programming ability and a degree or equivalent qualification.

The appointment will be made on the Computer and Other Related Staff (A) salary scale, £17180-£11415 per annum, according to age, qualifications and experience.

Further particulars are available from the Staff Office, Guildford SU1 2BT extension 778.

Applications in the form of a curriculum vitae (2 copies) including the names and addresses of two referees should be sent to the Staff Office, University of Surrey, Guildford, Surrey GU2 5XH, by 10 February, 1984 quoting reference 208/CW. (7298)

# PERMANENT

**Programmers** **Central London** **£11K**  
Minimum two years' experience IBM 34, 36 or 38, RPGII or III, £11K  
Project Leaders/Consultants with good DP experience, £Neg  
Banking or insurance preferred. Above to work in areas of Dev, MKTG or Quality assurance.  
All applicants must be willing to travel abroad at short notice. Ref: 387/DF

**Prog./Technical Support** **Central London** **£12K NEG**  
Graduate preferred, minimum three years' COBOL programming experience with ability to communicate effectively at all levels. To design Interrogation packages for users, prepare and present in-house training courses and provide technical support. Opportunities for some travel. Ref: 388/DF

**Project Leader/Programmer** **City** **£11K NEG**  
Minimum two years' experience for conversion of IBM PC micro computer network, must be able to communicate effectively and aid promotion of product. Opportunities to learn micros, gain banking skills and, in future, transfer to USA if desired. Ref: 389/DF

**Programmers** **Worcester** **£NEG.**  
(a) Good experience of VAX/PASCAL. Must communicate effectively as working with the users.  
(b) Good experience of DEC PDP11 or VAX with PASCAL, CORAL or FORTRAN. Rarer experience an advantage. Ref: 390/DF

Contact Diane Febregue at KPG or 01-789 8714 (evening or weekends)

**Analyst/Programmer** **Essex** **£8,500 to £12,000**  
Nationwide manufacturing company seek ambitious Analyst/Programmers with minimum 3 years' experience of working in an IBM 4341 environment running under DOS/VSE, CICS and DL/1. Fluency in COBOL is pre-requisite together with experience of Librarian. If you enjoy working in a team, can absorb pressure and possess good communicative skills that is the position for you. Ref: 8205/HP

**Systems Programmer** **Wiltshire** **To £11,000**  
A minimum three years' experience of Systems Programming on ICL or DEC Hardware with sound knowledge of FORTRAN and COBOL could qualify you to enter an exciting environment with our client - a household name in the publishing field. Ref: 8385/HP

**Hardware/Software Engineer** **Hants** **£7,000 to £16,000**  
Our client, a rapidly expanding company specialising in the manufacture of Communication Hardware, require quality personnel with an electronics background. Experience on Intel 286 micros and Disc interfacing together with familiarity in R and D environment are pre-requisites. Ref: 8385/HP

**Data Processing Manager** **Herts** **Min. £12,000**  
Electrical manufacturing company require DPM with sound fluency in RPG II on an IBM system 34. Experience of MAAPICS together with sound communications skills will qualify you for entry into a dynamic user-orientated environment. Ref: 8383/HP

Contact Haydn Parry at KPG

**Analyst Programmers** **Surrey** **£10K**  
Good commercial background is required by this company who are currently looking for an Analyst Programmer to work on their ICL ME29. You should possess solid programming experience with at least one year at Systems level in an on-line environment. Ref: 8368/PH

**Analyst Programmer** **Bucks** **c£12K+ Car + Bonus**  
This job involves talking to customers about new systems/enhancements etc and providing support after successful implementation. You should be self sufficient with good COBOL experience and will be working on Honeywell level 6. Ref: 8348/PH

**Programmer/Analyst** **West Sussex** **c£9,500K+ Bonus+ Relocation**  
This small DP department are currently looking for a COBOL programmer with a minimum of two years' experience in an on-line environment, preferably on the Honeywell Level-6. Ref: 8362/PH

**Cobol Programmers** **Surrey** **c£8K to £10K**  
Two programmers with a minimum of 12 months' solid COBOL required for development work on Burroughs B1000 series. Ref: 8366/PH

**A large DOS/VSE, CICS, DL/1 installation in West London require the following staff:**  
Software Manager - to supervise D/Bee and Support Group - c£18,000  
Systems Programmer - solid DOS/VSE experience - Negotiable  
Database Co-ordinator - experienced DL/1 (or IMS) person - c£15,000  
Jnr Systems Prog. - for statistical analysis work in support group - c£10,500

Contact David Mason Johns at KPG or 01-747 0989 (evenings or weekends)

**KPG** 01-948 5922

**KPG Computer Support Services Limited**  
Cobden House, Park Lane, Richmond, Surrey, TW9 2RA

# SMR

Sales & Marketing Recruiters Ltd  
Leaders in High Technology Recruitment

## SENIOR SALES EXECUTIVES

### NOBODY DOES IT BETTER!

In fact, only one other manufacturer does it at all!

Our client manufactures a computer system that is so predominant and successful that to mention the particular market place would instantly reveal the product concerned. Yet it is only one of a range of minicomputers with a system price ranging from £25,000 to £500,000. The company has a considerable reputation for product excellence and its ability to sustain a growth rate of 30% per annum is in no small way due to the through-range compatibility, as well as being one of the very few computer manufacturers able to provide commercial and industrial turnkey systems without necessarily having to rely on external systems houses.

Last year the company once again enjoyed considerable success with the top echelon of the sales force, earning in excess of £50,000, due not only to effective selling, but also aided by a high level of pre- and post-sales support and low staff turnover - the hallmark of a happy company!

This continuing expansion has consequently created a demand for additional sales people in

## LONDON & HOME COUNTIES

### MIDLANDS & NORTH

We are therefore seeking a couple of sales people from a hardware systems or computer services background, who really understand industrial and commercial applications. This is an opportunity that will particularly appeal to talented sales people who feel their potential is not really being achieved.

Our client offers a very effective compensation plan with low sales targets and high earnings with a company car and guaranteed minimum first year earnings of around £20,000. Yet, this guarantee is not set against new business commission earnings!

Please contact Alasdair Scott, Lindsay Howie, or Mike Linford, quoting reference SSB014.

**LONDON & SOUTH** 29 Oxford Street, London W1. (01) 734 9776  
**MIDLANDS & NORTH** Cathedral House, Beacon Street, Lichfield, Staffs. (05432) 56612  
Answering Service after 6pm and weekends  
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£18k Basic + Guarantee + Open Ended Commission On Target £20-30k

+ Car  
+ Pension Scheme  
+ Medical Scheme

Our client, a leading manufacturer of micro computers addressing commercial and industrial markets, is looking for professional salesmen for these divisions who can maintain his impetus and take full advantage of a product which has been supported by unparalleled commitment to design and development innovation, coupled with built-in reliability and quality.

If you are looking for a challenge and have goals for management measured by results, can develop markets by implementing sales and marketing strategies and so demonstrate your commitment for success, you will be rewarded both in financial and promotional terms.

Target for the top and join our client whose main aim is to be "No. 1" in all their activities. If you have a sales background with particular emphasis in selling to the dealer and O.E.M. markets, feel that you can take this important step forward for "84 and live in London, Home Counties or the Midlands, then call CLINTON HARVEY-DAVIES on 01-543 4844, Ref. No. CHD.1342A.

**STOP PRESS:** Also looking for professional, commercial training, person, with experience of financial modelling, stock control, payroll, etc. It is a ground floor opportunity in a new division. Basic £10-12k + Car. Ref. No. CHD.1342B PLUS Micro Marketing, Commercial Application. Basic £10-20k + Car. Ref. CHD.1342C.

Living in London and the Home Counties ring for other benefits  
CALL CLINTON HARVEY-DAVIES on 01-543 4844  
ALL TRONICS PEOPLE (JAGY) (7174)

## SALES ENGINEER

Gresham Lion, a leading systems designer for both the MOD and commercial market are currently seeking an ambitious Sales Engineer who has already cut his teeth in the world of visual display terminals or other peripheral equipment.

We are looking for a professional man or woman who can talk to original equipment manufacturers and users fluently and knowledgeably about our products and the need for incorporating them within a commercial environment.

You will be joining a successful team and because the North will be your exclusive territory it would be preferable if you lived in the Greater Manchester area.

We offer a very attractive salary package including a generous commission scheme, expenses and naturally a company car.

For more information please write to Richard Hancock enclosing a c.v. to Gresham Lion plc, Gresham House, Twickenham Road, Feltham, Middlesex. Tel: 01-894 5511. (Out of hours 01-898 7177).

**GRESHAM LION PLC** (7483)

## BOX NUMBERS

Box number replies should be addressed to:

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Quality of Management - 80

# Knock your closest competition at your peril

"NEVER knock your competitors" is one of the oldest by-words of selling, but perhaps one that is misleading. However, there can be no doubt that the process is a minefield that should be avoided.

There is a tempting suggestion that belittling others automatically implies the enhancement of oneself.

It is unlikely that, in declaring the inadequacies of someone else, a critic should wish to be considered as bad, or even worse.

It is implied that the accuser is above the failings he is pointing out. The stance is one of superiority.

That is dangerous ground where only facts can prevail, opinion is worthless, and relevance is an essential qualification.

However, I would not suggest that highlighting the weaknesses of competitors within the confines of the sales negotiation is an unacceptable process.

On the contrary, it is essential for every salesman to have a thorough knowledge of his competitors in terms of product shortfall, product advantages and self-cancelling benefits.

Armed with this information, it is his responsibility to make the buyer aware of the inadequacies of competitors by emphasising exclusive advantages rather than competitive failings.

by highlighting our competitors' situation, nor mentioning it at all, or even playing it down; and which approach will do most for enhancing the relationship between the buyer and myself?

It is not uncommon for a buyer to lose faith in an entire marketplace due to the failure of a single supplier, because he sus-

"How is the confidence of the buyer being affected by the problems of another supplier?"

pects the problem is fundamental to the nature of the product. For sales people to feed such possible fears is a dereliction of duty and a serious breach of professional ethics.

People always suspect the motives of those who are anxious to decry the failings of others - the "holier-than-thou" syndrome. Even the most generous of interpretations - anxiety, misconception, ignorance and the like - are equally unfattering, but the conclusions of the more cynical buyer - envy, malice, pettiness, stupidity, opportunism - could destroy the salesman's chances forever!

I hope I have said sufficient to distract you from the possible pursuit of abusing competitors. If I have laboured the point I do not apologise.

Indeed, I have even more to say about it in Chapter VII of my recent book, for I regard it as an important issue.

Truth is no excuse either. Just because you know without question that you are selling a fact does not make it more acceptable to the buyer or increase your stature - quite the contrary.

It is so easy to lose personal credibility by appearing jaundiced or anxious to exploit the problems or failings of others

"This device is not only essential if you are to succeed in solving your particular problem, but is also unique to our product."

Even so, the emphasis must be upon those facts which are relevant and significant without ever breaching the bounds of ethically acceptable conduct. This demands considerable discretion and sensitivity, for the line between positive and negative criticism is often a very fine one.

It is so easy to lose personal credibility by appearing jaundiced or anxious to exploit the problems or failings of others. The buyer is bound to ask himself how someone so apparently devoid of altruism will react if there are problems with the product once it is purchased.

What is it that tempts some sales people into trying to pick up cheap points from the competition by envious, innuendo and other equally unattractive means?

For one thing it's easy, and for another it can give a buzz of smug satisfaction to those with an "I'm alright, Jack" mentality.

How warm and secure it can feel to know that your main competitor is in trouble - product failings, financial difficulties and so on.

But the thinking salesman will ask himself: "How is the confidence of the buyer being affected by the problems of another supplier? Does he suspect that those problems may not be exclusive to that product?"

"Does it help my situation more

People always suspect the motives of those who are anxious to decry the failings of others - the "holier-than-thou" syndrome

Is there anything more repugnant than someone who knows he is irrefutably right and damns the consequences? Being right does not give the right.

"All About Selling", published by McGraw Hill, £8.95. Available from Trader Enterprises, c/o Sales and Marketing Services, 29 Oxford Street, London, W1.

Alan Williams

## PUZZLE ANSWER

If n equals the mystery base, then  $n^2 + 2n^3 + 3n + 4 = 7,642$ ; or  $n^2 + 2n^3 + 3n - 7,642 = 0$ . From this equation we can say that n must be one of the factors of 7,642 (which are 2, 3, 19 and 67). Clearly 19 is the most likely candidate, and further calculation confirms this to be the base involved.